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INDEX TO VOLUME LVI

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JANUARY, 1955

No. 1

Six Years Experience with Dicumarol Prophylaxis against Postoperative Thromboembolic Complications in Private Practice

Harry R. Custer, M.D., and Russell L. Mustard, M.D.

Colby, Kansas

Battle Creek, Michigan

The private practice of surgery differs considerably from the practice of clinical and research surgery. The surgeon in private practice is obligated to employ only proven techniques and methods of therapy. Thus, the following discussion concerns a period of six years in private surgical practice and the prophylactic use of dicumarol, after its proven value, against postoperative thromboembolic complications.

All the patients involved in this study were personally examined, operated upon, treated, and followed by the authors. In this way preoperative, surgical, and postoperative uniformity was obtained. A total of 4,383 patients were operated upon between the years 1948 and 1954; of these, 331 received dicumarol prophylactically, following surgery.

In recent years there has been a steady increase in the number, variation, and extent of surgical procedures, along with an increase in the age of the surgical patient. Proportionally, there has been an increasing opportunity for the development of postoperative thromboembolic complications. Also, it has been proved that there is an unpredictable physiological increase in the activity of the blood clotting elements following the trauma of surgery.⁴ The possibility of increased use of preoperative and postoperative blood transfusions and certain antibiotics

causing increased coagulability of the blood has been reported.¹⁰ Aside from the possible causes, reports show an increased incidence in postoperative thromboembolism in the last few years.¹⁰

The actual incidence of minimal and subclinical postoperative thrombosis and pulmonary embolism is not known. Undoubtedly many cases are misdiagnosed and are called myocardial insufficiency, cardiac failure, or chronic shock. However, it has been shown the middle aged and elderly patients who are confined to bed have more than a 50 per cent incidence of phlebothrombosis of the deep veins of the leg.⁶ The same author states that fatal pulmonary embolism was responsible for 3.13 per cent of all deaths in these patients.⁶

Pratt stated that 8 per cent of his reported postoperative deaths were due to thromboembolism.¹¹ According to Kirby,⁷ postoperative venous thrombosis has a reported incidence of from 1 to 10 per cent with pulmonary embolism being the etiology of about 5 to 7.5 per cent of all postoperative deaths.^{7, 8} McCortney⁹ stated that among the postoperative fatalities, thromboembolism was present in 11.5 per cent, and 5.3 per cent of the deaths were due to pulmonary emboli. In his series operations on the uterus accounted for 25.4 per cent of all postoperative thromboemboli, and surgery for herniae ac-

counted for 22.6 per cent of all postoperative fatal pulmonary emboli.

Reports have shown that there is no warning in 70 to 80 per cent of all postoperative fatal pulmonary emboli.^{7, 8} Therefore, it is obvious that prophylaxis is far superior to treatment of the complication.

It is the intent of the authors to present a safe and effective method of using coumarin (dicumarol) prophylactically against postoperative thromboembolic complications, and to evaluate the efficacy of dicumarol prophylaxis when used under a closely supervised routine in private practice.

Dicumarol was preceded by heparin in the prophylaxis of thromboembolism. But today the coumarin compounds (dicumarol, tromexan, and cyclocoumeral¹) are by far the most widely used drugs in the prevention of thromboembolism. Dicumarin, the active principle in spoiled sweet clover, was isolated and crystallized and reported in the well-known classical experiments of Link and his associates.¹²

According to Quick, the action of dicumarol is primarily on the liver by inhibiting the formation of prothrombin and fibrinogen. Thus, the anti-thrombotic effect of dicumarol results from diminution in the available prothrombin and fibrinogen necessary for clot formation. It has further been shown that it takes 24 to 72 hours for dicumarol to significantly lower the prothrombin time in most patients.

Dicumarin was first given to humans in May, 1941, by Allen, Barker and Waugh.¹ Many errors were made, and refinements were necessary before dicumarol treatment was considered safe and effective. At first dosage was regulated by prothrombin time given in actual time rather than as a per cent of normal. Lee and White, Quick, and many others devised different methods of determining the prothrombin time. There were as many proposed routines of giving dicumarol as there were reports.

Numerous accounts of bleeding and frank hemorrhages from using dicumarol therapy appeared. Allen¹ originally stated that vitamin K was clinically ineffective to reduce the prothrombin time in over-dicumarolized patients. No one seemed to agree on the optimum level of prothrombin time in postoperative patients. Allen,¹ in his first report, kept the prothrombin time between 35 and 60 seconds and began giving dicumarol on the first postoperative day. Later, Allen² maintained a prothrombin level between 10 and 30 per cent of normal and reported serious bleeding of 1.8 per cent and minor hemorrhages of 3.4 per cent. Barker³ started administering dicumarol on the second postoperative day and kept the prothrombin time between 10 and 30 per cent of normal. He reported major bleeding of 2.7 per cent in abdominal hysterectomies and 4.9 per cent in other operations.

In 1949, Wise and Loker¹³ advised conservative dicumarolization, keeping the prothrombin time at 40 per cent of normal. They had no major hemorrhages and only 2 per cent of bleeding tendencies. It was found that fresh whole blood reduced the prothrombin time rapidly, but only for 10 to 12 hours, and vitamin K usually returned the prothrombin time to a safe level in 10 to 18 hours in patients with adequate liver function. Many excellent reports on dicumarol therapy appeared. Felder⁵ stated that anticoagulants reduced the incidence of secondary embolism from an expected 30 per cent to 2.17 per cent and reduced the rate of secondary fatal pulmonary embolism from an expected 25 per cent to zero.

Therapy with the coumarin compounds is still undergoing the test of time and numbers. Newer methods of combating the problem of postoperative thromboembolism are constantly being introduced. To date we do not have the final answer, and the status of our ideas of the blood clotting mechanism is ever changing. Therefore, we must approach the problem of postoperative thromboembolism with an open mind.

Our regime for the prevention of postoperative thromboembolism complications consists of 13 salient points:

1. The proper preoperative preparation of the patient for surgery, including reduction of weight in the obese and treatment of any co-existent medical or mental condition.
2. Sensible preoperative and postoperative sedation to avoid prolonged narcosis and depressed cardio-respiratory functions.
3. Proper hydration of the patient to prevent hemoconcentration and dependent edema.
4. Gentle handling of the tissues during surgery and the insistence of pin-point stasis.
5. Thorough hemostasis to prevent hemorrhage, bloody drainage, and hematomas.
6. Simplification of the surgical procedure to avoid unwarranted prolongation of anesthesia and surgical exposure of the patient.
7. Application of elastic bandages to the extremities when indicated and the avoidance of constricting dressings to the abdomen.
8. Prevention and energetic treatment of postoperative abdominal distension.
9. Proper and frequent changing of the patient's position to avoid prolonged dependency of a part and the prevention of kinking of the popliteal and iliac veins.
10. Systematic postoperative exercises, including deep breathing and movements of the extremities.
11. Early postoperative ambulation.
12. Venous ligation when indicated.

13. The use of prophylactic anticoagulant therapy in selected patients.

The present studies were made between 1948 and 1954 on 4,383 surgical patients, including 432 hernioplasties and 387 hysterectomies. From the total number of patients, 331, or 7.55 per cent, received dicumarol. Dicumarol prophylaxis was administered to 326 patients postoperatively, and five patients were given dicumarol as part of their therapy for postoperative thrombophlebitis.

It is neither rational nor practical to give all patients dicumarol postoperatively. The indications and contraindications for dicumarol prophylaxis have been crystallized by experience. There are 12 types of patients who are prone to develop postoperative thromboembolic complications. They are: (1) cancer patients, (2) obese patients, (3) patients who have had extensive pelvic or vascular surgery, (4) debilitated patients requiring prolonged bedfastness, (5) patients who have had major gastrointestinal surgery, (6) patients with fractured hips, (7) those patients having surgery for large recurrent inguinal, femoral or ventral herniae, (8) patients suffering from vascular trauma or disease, (9) patients with certain blood dyscrasias, (10) patients who, through necessity, are receiving prolonged sedation and narcotics, (11) patients having partial vascular occlusion due to abdominal pressure, edema, large tumors, or obstruction, and (12) patients with a previous history of thromboembolic disease.

Any patient who fell into two or more of the above categories was routinely put on dicumarol prophylactically after surgery. Other patients received dicumarol at the discretion of the surgeon.

The 331 patients who received dicumarol postoperatively were put on the schedule outlined below, which we believe to be both safe and effective in preventing postoperative thromboembolic complications.

A prothrombin time is determined as a per cent of normal on the third postoperative day, using the method devised by Quick. It must be emphasized that the prothrombin time determination must be standardized, accurate, and reliable. Fortunately, most hospital laboratories meet these requirements by having well-trained technologists who are frequently and consistently running prothrombin time determinations. If the prothrombin time is between 90 and 100 per cent of normal on the third postoperative day, the patient is given 200 mg. of dicumarol. If the prothrombin time is between 60 and 90 per cent of normal, the patient is given 50 to 100 mg. of dicumarol. If it is below 60 per cent of normal, no dicumarol is given. After the initial dose of dicumarol is given, additional dicumarol administration is individualized for each patient. Daily prothrombin time determinations are performed to determine the patient's response. A prothrombin time of 40 per cent of normal is maintained through the 18th postoperative day in the average case. Selected patients are continued somewhat longer due to debility, prolonged bedfastness, or vascular disease.

Patients having purpuric diseases, bleeding lesions, advanced renal or hepatic disease, subacute bacterial endocarditis, or recent surgery on the central nervous system generally are not placed on a dicumarol routine for well-known reasons. If the prothrombin time falls between 20 and 40 per cent of normal, watchful waiting is recommended unless bleeding tendencies are present. If the prothrombin time is below 20 per cent of normal, or if there is some evidence of bleeding, large doses of synthetic vitamin K are given. If bleeding is severe, immediate blood transfusions and vitamin K are both administered.

RESULTS

The type and number of patients who received

TABLE I

Type of Surgery	Total Cases	Number of Cases of Dicumarol	Per Cent of Cases of Dicumarol	Per Cent of Postoperative Thromboemboli	Per Cent of Postoperative Bleeding	Deaths
Inguinal Hernioplasty.....	352	71	23.0	0.286 (a)	0	0
Ventral Hernioplasty.....	64	24	37.5	0	0	0
Femoral Hernioplasty.....	16	6	37.5	0	0	0
Varicose Vein Surgery.....	143	15	10.5	0	0	0
Hysterectomy.....	387	111	28.9	0.256 (b)	0.256 (c)	0
Cholecystectomy.....	257	37	14.4	0.778 (d)	0.389 (e)	0
Bowel resection with anterior anastomosis.....	49	11	22.4	0	0	0
Gastrectomy.....	91	15	16.5	0	0	0
Abdomino-perineal resection.....	59	26	44.1	0	1.69 (f)	0
Bowel Obstruction.....	10	2	20.0	0	0	0
Total.....	1428	326		3	3	0

a. One patient not on dicumarol developed thrombophlebitis in left femoral vein. No further complications after dicumarolization.

b. One patient not on dicumarol developed phlebothrombosis in left popliteal vein. No further complications after dicumarolization.

c. One patient developed moderate vaginal bleeding with a prothrombin time of 27 per cent of normal. Responded well to vitamin K.

d. Two patients not on dicumarol developed thrombophlebitis in lower extremity. One patient developed a pulmonary embolus.

e. One patient developed ecchymosis and transient hematuria which responded to vitamin K.

f. One patient developed moderate bleeding from the abdominal wound with a prothrombin time of 22 per cent of normal. Patient responded to vitamin K therapy.

dicumarol prophylactically and our results are given in Table I. The 71 patients who had inguinal hernioplasties and the 37 who had cholecystectomies were given dicumarol after exhibiting at least two of the forenamed indications for dicumarol prophylaxis, usually obesity or a previous history of thromboembolic disease.

In all, 4,383 surgical operations have been performed in the last six years with only one incident of a clinical postoperative pulmonary embolus and without any major postoperative hemorrhage. There have been four instances of clinical postoperative thromboembolic complications, and these patients were not on a dicumarol prophylaxis regime. One patient developed a left popliteal thrombophlebitis on the 4th postoperative day following a cholecystectomy. One patient developed thrombophlebitis in the right superficial femoral vein, followed by a right basilar pulmonary embolus five weeks after a cholecystectomy. One patient who had had a total hysterectomy developed a left popliteal thrombophlebitis on the 11th postoperative day. The other instance of postoperative thrombophlebitis occurred on the 5th postoperative day, following a right inguinal hernioplasty. Three patients recovered on heparin and dicumarol therapy without developing a clinical pulmonary embolus. The other patient who developed a pulmonary embolus made a complete recovery on the same therapy.

One patient showed moderate vaginal bleeding on the 5th postoperative day, following a total hysterectomy, and had a prothrombin time of 27 per cent of normal. Another developed moderate bleeding from the abdominal wound on the 7th postoperative day with a prothrombin time of 22 per cent of normal. Both promptly responded well to large doses of synthetic vitamin K.

Two patients developed prothrombin times of less than 5 per cent of normal without evidence of bleeding. One patient had a total hysterectomy for an adenocarcinoma of the uterus with a co-existing active bilateral thrombophlebitis from recent vein injections. This patient was operated upon with a prothrombin time of 70 per cent of normal, and postoperatively she was maintained with a prothrombin time of 40 per cent of normal without incident.

DISCUSSION

Modern improved anesthesia, preoperative preparation, surgical technique, and postoperative care have reduced the surgical and postsurgical mortality to a point where the surgeon now focuses a great deal of his attention on those problems that formerly received little consideration. One of these problems is that of postoperative thromboembolism, which fortunately is responsible for only a fraction of a per

cent of postoperative mortality and morbidity. However, it is distressing to see a patient free of shock and infection, following surgery, suddenly develop a postoperative thrombus or die without warning from a sudden pulmonary embolus. Such instances remain vivid in the minds of those who practice surgery, and therefore a continuous energetic effort is being made to prevent such tragic complications.

Dicumarol has a definite place in the prophylaxis of postoperative thromboembolic complications. It has the advantages of oral administration, it is moderate in expense, and it can be given to the ambulatory patient with reasonable safety. However, anticoagulant therapy is but a part of the necessary regime to lower the morbidity and mortality from postoperative thromboemboli. The factors of gentle handling of the tissues, early ambulation, and the simplification of surgical procedures are vitally important in the prevention of thromboemboli.

The future may hold the solution to the problem of postoperative pathological blood clotting through the use of new techniques and new drugs. However, until such techniques and drugs prove their worth by extensive research, the surgeon cannot afford to apply them in private practice. In the light of our present knowledge we have shown that dicumarol, if used judiciously, is a valuable drug in the prophylaxis of postoperative thromboembolic complications.

SUMMARY

1. Six years of experience in private surgical practice using dicumarol prophylactically against postoperative thromboembolic complications has been presented.
2. A regime for the prevention of postoperative thromboemboli has been outlined, and the results have been tabulated, including the maintenance of a prothrombin time of 40 per cent of normal which has proved to be both effective and safe.
3. A total of 4,383 surgical procedures have been performed with only one instance of clinical postoperative pulmonary embolus and a 0.069 per cent incidence of postoperative thrombophlebitis.

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Salicylate Poisoning

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Ever since the first therapeutic use of the natural-ly occurring salicylates by Hippocrates some 2,400 years ago, they have probably been one of the most widely used therapeutic aids to mankind. Although the salicylates are widely and for the most part beneficially employed, they are not so completely innocuous as most would believe. While it is true that salicylates do not cause a great percentage of the death rate due to poisons, it is more important that most of the victims are in the pediatric age group. It is therefore the purpose of this paper not so much to reveal new data in the study of salicylate poisoning but merely to bring to the fore the fact that these relatively benign drugs can also be quite dangerous. The following is a brief résumé of a case seen at Children's Hospital, Washington, D.C.

A nine-months-old white male was relatively well until three days prior to admission, at which time the child began to show signs of an upper respiratory infection with associated nausea and vomiting. The baby was seen by a local physician, and the parents were told the patient had an inflamed throat for which penicillin was given. Aspirin was prescribed for the fever. As the baby would vomit shortly after the aspirin was given, the mother gave the child more aspirin, so that during a 36-hour period a total of about 37 grains was administered. The vomiting persisted and the child became progressively more listless and flaccid. On the day of admission, the respirations became rapid and labored, and the infant was brought to the hospital in a semicomatose state.

Physical examination revealed a well developed, well nourished, white male infant with apparent tachypnea and respiratory distress with marked sternal retraction. Temperature was 105, pulse 140, respira-

tions 60. The head was asymmetrical with flattening of the left parieto-temporal region. The mucous membranes of the mouth and pharynx were considerably dehydrated. Examination of the heart and lungs was essentially negative. The only other abnormal physical finding was a hypospadias.

The initial laboratory work showed the following significant results:

Blood CO ₂	21 volumes per cent
Blood Chlorides	113 mEq/l
Blood pH	7.47

The patient was placed on intravenous fluids immediately and subsequently received 75 cc. of Ringier's lactate, 280 cc. of 1/6 M. lactate, and 80 cc. of plasma with 8 cc. of concentrated sodium succinate. From the afternoon of admission to 3:15 A.M. the following day, the infant received a total of 500 cc. and from 3:15 to 5:15 A.M. another 450 cc.

The final CO₂ combining power was 20 volumes per cent and the blood pH was 7.1. The child expired at 5:15 A.M., some 14 hours after admission.

Since the child was hospitalized for only 12 hours, the case was turned over to the coroner for autopsy. A report was not available at the hospital, and the only information the author could obtain at this time was that the primary cause of death was acute cardio-respiratory failure secondary to salicylate poisoning.

In discussing the mode of action of the salicylates in causing the effects seen with toxic doses, it is deemed advisable to consider the pharmacology of the salicylates first, and thus a true understanding of their wide range of action on many organ systems may be appreciated.

Although the salicylates have long been used for empiric relief of such afflictions as headaches, myalgia, and arthralgia, their exact mechanism of action is not

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entirely known. It is suggested by Goodman and Gilman¹ that it is probably due to a central depressant action on the optic thalami. That this is the site of action rather than a cortical one seems to be substantiated by the fact that analgesic doses of salicylates cause no mental disturbances, anesthesia, or changes in sensation other than pain sense.

The mechanism of action in salicylate antipyresis seems to be a debatable issue with the two main theories being increased heat loss and decreased heat production. However, the preponderance of evidence seems to favor increased heat dissipation.²

The effects of therapeutic doses on the cardiovascular system are insignificant. However, with larger doses the peripheral vessels do show a tendency to relax, due to a direct effect upon the smooth muscle of the blood vessel. With toxic amounts there is a circulatory collapse caused both directly and by central vasomotor paralysis. In experimental work using perfused hearts, the concentrations necessary to injure that organ were much higher than are obtainable in man even with toxic doses. There has been no evidence as yet, either experimentally or clinically, that the salicylates, especially aspirin, are injurious to the heart.

Epigastric distress, nausea, and vomiting are the most common manifestations of the effect of salicylates on the gastrointestinal tract. Large doses have been reported to cause stomach ulcerations experimentally, and melena has been produced in the human being. Vomiting after toxic doses results from a combination of a local irritative effect and a central emetic action.

The salicylates also cause an increased flow of bile, probably by direct action on the liver cells. The experimental evidence concerning this, however, is under considerable dispute, and its use as a cholagogue is not indicated.

In considering the metabolic actions of the salicylates, a prominent effect of therapeutic doses is the increase of urinary excretion of uric acid. The increase varies from 30 to as much as 100 per cent. The blood uric acid level may be reduced to one-third its original value. This is not always the case as the blood level may occasionally be elevated. The mechanism by which this increase in excretion is accomplished is not fully known. One of the more feasible theories is based on the inhibition by the drug of uric acid reabsorption by the renal tubules.

The number of red and white blood cells does not seem to be significantly altered by salicylate medication. The mode of action in depressing the leukocytosis in rheumatic fever is not well understood. Methemoglobin is not produced by the salicylates, and no reports of agranulocytosis from their use have been seen.

Moderate doses of salicylates seem to cause diuresis. This is probably best explained on the basis of a salt effect. Larger doses, however, decrease urine output, probably by actual renal impairment as attested to by decreased P.S.P. excretions and albuminuria. The term "salicyl" edema has been applied to the increase in weight seen in people on large doses of salicylate; however, no actual pitting edema is evident.

The anti-rheumatic actions are well known but just as poorly understood. Reduction of pain, immobility, and inflammation in the rheumatic fever joint is so dramatic that this point has been used by many as a diagnostic measure. However, the effect of the disease on the heart and other viscera is little altered, nor is the course of the disease.

The salicylates are readily absorbed from most body surfaces, including the skin, as well as the mucous membranes of the gastrointestinal tract. Considerable absorption takes place in the stomach. This probably accounts for toxic doses being administered unwittingly to vomiting patients. They are distributed to every tissue of the body without concentration in any particular tissue.

The salicylates are eliminated from the body by all channels, especially the urine. They can be demonstrated there from 10 to 15 minutes after administration of a therapeutic dose. About 20 per cent of the salicylate is destroyed by the tissues. Administration of sodium bicarbonate simultaneously does not hasten excretion of salicylate.

The dosage of the salicylate depends to a large extent on the condition being treated. The usual dosage for adults varies from 5 to 15 grains which may be repeated in 4 hours. For children a good rule of thumb is a grain for each year of age up to 5 years. In rheumatic fever, however, as much as 1.0 gm. should be given every hour until early toxic symptoms appear.

In discussing salicylate poisoning per se, some of the more salient features concerning incidence will be mentioned.

INCIDENCE

From the records of the U. S. Bureau of the Census,² it is apparent that there is no significant trend in the death rate from salicylate poisoning. The rate of salicylate poisoning is approximately 50 per cent higher in men than women. This is probably due to the ingestion of methyl salicylate as a substitute for alcohol in intoxicating beverages.

The average annual death rate is not high. During the period 1939 to 1943, with an annual mortality of 1,267 from accidental poisoning by all solids and liquids, salicylates contributed only four per cent of this total. This appears significant in light of the

fact that the drugs are in universal use and are easily procured by the general public.

Deaths due to acetylsalicylic acid represent approximately one-third of the mortality from all salicylates. Here again males predominate with a 20 per cent higher incidence than females.

There are significant differences among the various age groups. There is a relatively high mortality rate in children between the ages of 1 and 4 years. The mortality rate drops to a low level in the age class 5 to 14 years and then rises in the succeeding age groups. The high rate in the age class under 5 is probably due not so much to increased toxicity for children but rather to medication by ignorant parents and the propensity of children to swallow any readily available object.

From 1933 to 1943, the U. S. Bureau of the Census recorded 224 deaths due to methyl salicylate in children under 5 years of age and an average annual mortality rate 25 times higher than that of the remainder of the population. This is probably best explained in that this compound is tempting to children since it has the odor of wintergreen flavoring so familiar in candy and soft drinks.

SYMPTOMS

The time interval before onset of symptoms depends on the method of ingestion, that is, whether it is administered accidentally or in therapeutic doses. On the average, about 12 to 24 hours are required before symptoms appear when the drug is taken accidentally in toxic quantities. However, when salicylates are taken in divided doses, toxic symptoms do not appear for from 1 to 4 days.

The symptom most commonly seen is hyperpnea. At first it is mild, then it becomes more severe, and finally the stage characterized by Kussmaul breathing is reached. This type of respiration continues until either the acidosis is treated properly or the patient dies of respiratory failure. There are, in addition, numerous other signs and symptoms such as: vomiting, which may contain coffee ground material; an acetone odor to the breath; irritability and restlessness; cyanosis or pallor; semiconsciousness or stupor; profuse sweating; dehydration; fever of high degree; convulsions, or abdominal pain. Occasionally there may be actual bleeding, or a purpuric rash may be present.⁸ Sometimes renal involvement is evidenced by scanty urine. This may progress to anuria as intoxication increases. It is fairly common for adults to complain of tinnitus and dizziness. It is also not uncommon to see mental confusion and delirium.

LABORATORY FINDINGS

The significant laboratory findings vary, depending on the degree of toxicity and the time or stage

at which the studies are made. Probably the most common finding is the presence of salicylates in the blood and urine. The amount of salicylates required in the blood to produce toxic manifestations varies with the individual. A blood level as low as 29 milligrams per cent was found in one patient with symptoms, while another with a level of 68.4 mg. per cent recovered after proper therapy. The blood sugar may be reduced to as low as 44.8 milligrams per cent in patients with toxic complaints. In the uncompensated acidotic stage, the carbon dioxide combining power is almost always decreased substantially. Some reports have shown a CO_2 as low as 14 volumes per cent. A blood pH of 7.1 has also been reported.

The prothrombin time is often increased. The highest reported is two minutes and forty-five seconds. The longest bleeding time recorded to date is 10 minutes, with a clotting time of $7\frac{1}{2}$ minutes.

The reaction of the urine usually depends on the stage of intoxication. At first there is usually an alkaline reaction, but later, when acetone and diacetic acid are formed, the urine becomes acid.

PATHOLOGIC PHYSIOLOGY

In 1937, Dodd et al.⁴ reported the effects of salicylates on experimental animals. The direct effects of the drugs are an increase in the metabolic rate with an increase in heat dissipation, nausea, vomiting, irritation of the kidney, and more or less mental disturbance. The vomiting, diuresis, and sweating all act to produce dehydration with its subsequent rise in temperature and decrease in urinary output.

Acidosis results mainly from production and accumulation of ketone bodies and inadequacy of circulation. Ketosis is caused by depletion of food reserves of the body incident to the rapid metabolic rate.

Dodd⁴ has stated, "No serious symptoms are produced by large amounts of salicylates experimentally, so long as fluid intake is adequate and there is no interference with heat loss." However, it was Hartmann et al.⁵ who clearly outlined the process of excess salicylates in the human.

1. *Early effects:* There is hyperpnea due to stimulation of the respiratory center directly by the salicyl radical. This produces a respiratory loss of carbon dioxide, altering the sodium bicarbonate-carbonic acid ratio in the direction of alkalinity. This is the stage of respiratory alkalosis.

2. *Later effects:* The next stage is one of compensated acidosis caused by ketosis resulting from altered carbohydrate metabolism and the presence of retained acid anions in the blood and tissue fluids. The alkali reserve has been lowered previously to

compensate for respiratory alkalosis. Compensation is now maintained by renal and blood buffer systems and by the respiratory mechanism. The hyperpnea, which is now present, is due to the central effect of increased acidity of blood and tissue fluids.

3. *Late effects:* The final stage is that of decompensated acidosis with depletion of the alkali reserve, decrease in blood pH, and failure of the respiratory center in its attempt to achieve compensation.

More evidence of disturbed physiology is the increase in the prothrombin time by large doses of salicylates. Stevenson,¹⁰ in reviewing 13 autopsies in cases of salicylate poisoning, found that one-half of the cases showed petechiae of the epicardium and one-third showed hemorrhages in the pleurae and lungs.

In experimental work with convalescents, Fashena and Walker⁹ found a marked prolongation of the prothrombin time with doses of sodium salicylate ranging from 0.20 to 0.22 grams/kilo. This was noted to occur within the first 24 hours and reach a peak by the second day. Then followed a drop in the prothrombin time which, however, never did reach the level present before treatment. They consider the hemorrhagic complications to be due to a hypoprothrombinemia and other factors such as vascular dilation or vascular injury. Dietrick et al.⁷ reported one case with a prothrombin time of 55 seconds and another of 25 seconds. Ashworth and McKenie⁸ are of the opinion that these hemorrhagic manifestations are not based on liver damage because they can be altered by vitamin K.

PATHOLOGY

A common post-mortem finding is petechial hemorrhages. They are widespread involving brain, lungs, pleura, heart, and gastrointestinal tract. Occasionally they are seen in the adrenals, thyroid, spleen, and lymph nodes. The liver often shows parenchymatous degeneration, fatty infiltration, acute inflammatory changes, or hydropic degeneration with beginning necrosis. In some autopsies the kidneys were described as showing hyperemic changes and fatty degeneration.

TREATMENT

The mode of treatment depends for the most part on the stage the patient is in when seen. In accidental ingestion the first treatment is gastric lavage and hydration. Salicylates are usually found in the blood 10 minutes after ingestion and in the urine in 10 to 20 minutes. On the average, maximum blood levels are reached in an hour, with variations up to 12 hours. After hyperpnea is evident, gastric lavage is of no use. During the first stage, that of alkalosis, glucose in saline should be administered, preferably

intravenously, but the subcutaneous route may also be used. The purpose of this is to spare the body reserves of glycogen and combat alkalosis by providing chlorides to combine with base. The intravenous fluids should be continued as long as the patient cannot take fluids by mouth. This provides sufficient fluids to maintain renal excretion. Another important measure at this time is to give vitamin K, 10 to 25 milligrams, and vitamin C, 100 mg., in order to combat the hypoprothrombinemia and bleeding which will otherwise ensue. This first stage is usually determined by observing the carbon dioxide combining power and the presence of an alkaline urine.

The second stage, that of compensated acidosis, is best treated with glucose solution and alkalinizing agents. One of the most widely used alkaline solutions is the 1/6 molar lactate. Ringer's lactate may also be used. The amount given depends mostly on the value of the carbon dioxide combining power. Even so, if this cannot be determined, the degree of acidosis should be estimated and the 1/6 molar lactate given. The solution of 5 per cent glucose supplies necessary carbohydrate, aids diuresis and hydration. If the response to the lactate solutions does not appear adequate, a 1.5 per cent solution of sodium bicarbonate may be given intravenously. Some reports have shown excellent results with this agent. If the patient can take fluids by mouth, orange juice and sodium bicarbonate may be given. Vitamins K and C should still be given subcutaneously, however. An oxygen tent will usually prove to be necessary and transfusions of whole blood may be given, especially in the presence of widespread hemorrhage. Adequate fluids to help in eliminating the salicylates are very important.

Whether the third stage is present is difficult to determine; here a blood pH often helps. The treatment is the same as for the second stage but should be intensified. It is important to keep in mind that therapy should never be relaxed until the patient is conscious, well hydrated, and has adequate renal function.

If convulsions ensue, sodium phenobarbital should be used and a lumbar puncture may be carried out.

In conclusion it might be said that it is well to suspect salicylate poisoning in any hyperpnea of unexplained etiology. As a practical diagnostic measure, Gerhart's test may be used. It simply entails adding ferric chloride to the urine. A purple interfacial ring develops which persists on boiling.

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Laparotomy Incisions

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Selection of a particular incision for a given laparotomy is probably very largely a matter of habit. Most older surgeons are still using the same incisions with which they started. Younger surgeons usually follow the techniques of those under whom they have trained. This is interestingly noted in such an outstanding group as the Lahey Clinic where Lahey used rectus muscle splitting incisions. Cattell still defends that procedure, though he admits the incision must not be too long or extend too low in the abdomen.

In careful studies comparing types of incisions, almost invariably data are presented supporting use of transverse incisions. On canvassing my own surgeon friends, I find that a large proportion give the matter little or no thought. They consider it of small importance and blithely continue their time-tried incisions that seem to serve their purposes. Those who have seriously considered the matter to the point of comparing various techniques almost invariably trend toward adoption of the transverse incision. In spite of this, I believe there are still many more vertical than transverse incisions.

The transverse incision is not at all new. It was 131 years ago, in 1823, that Baudelocque described a low transverse incision for cesarean section. Pfannenstiel presented his well known incision in 1900. Frederick Collier of Michigan is one of the most active of contemporary exponents of the transverse incision and presents his case most ably and convincingly.

It is difficult to build a case against the transverse incision. Proponents set forth the transverse direction of the aponeurotic and fascial fibers; the transverse course of the nerves that traverse the abdominal wall; the increased ease with which a transverse incision

may be closed; the greatly decreased disrupting forces of coughing, sneezing, retching, and ordinary muscle activity as applied against the sutured transverse wound; finally, the tremendously greater and more satisfactory exposure obtained through the transverse incision greatly facilitating the operative procedure.

It is quite obvious that bites of suture across the horizontally directed fascial fibers must give immeasurably more strength to a wound than those placed in the edges of a wound which has cut across those fibers, as is true in vertical incisions. It is like comparing the holding power of a nail driven into the side of a 2 x 4 with that of one driven into the end grain.

How many times has each of you sweated it out trying to pull together the edges of a vertical wound in an obese patient with distention, while the anesthetist has permitted her to waken to a straining stage. Think of the many times your suture has pulled out of the fascia leaving a frayed, shredded margin that you finally got together, reinforced with large retention sutures, possibly over buttons or short pieces of rubber tubing; you applied 3 to 5 yards of wide adhesive tape, finally a tight muslin binder, and cautioned the nurse not to let her strain or sit up for at least a week. And then if it did not disrupt, you shook your head and wondered why.

It is many times easier to close the transverse wound. You get a firm bite across the fascial fibers. It is almost impossible to pull it out; the margins simply can't get away. They come together easily and are firmly held there. Furthermore, any straining movements of the patient have comparatively little effect as interference to your progress. In 1927, G. A. Sloan did 20 laparotomies using L-shaped incisions. With the patient under light anesthesia he applied spring balances to the wound margins and measured the forces required to hold the margins together

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From the Nelson Clinic, Manhattan, Kansas.

against the patient's active respiratory movements. To hold vertical incisions together took a force 30 times greater than for transverse incisions. Furthermore, he found the required force increased in proportion to the square of the length of the wound. In one of the longer vertical wounds, the required force was 45 times that for an equivalent transverse wound.

It is well known that if there is division of more than one of the horizontally directed nerves segmentally supplying the rectus muscle, the fibers of the muscle medial to the incision atrophy and are thereafter largely useless, furnishing neither support nor muscular action. The same is true of the flat muscles lateral to the recti. There seems to be little argument against the advisability, from this standpoint, of placing an incision between nerve trunks rather than cutting across them.

Finally, when one sees the gall bladder pop up through a transverse incision like a bass trying to jump into the boat, he wonders why he struggled and perspired while using a split rectus incision all those years. And gastric surgery is right on top with a wide curved transverse incision. It is true that occasionally there must be a short vertical limb added with a high, narrow, subcostal arch, but only rarely even then.

Possibly a common hesitancy toward transverse incisions is the natural feeling against cutting across the rectus muscle. There need be no fear on this score. While such an incision is catastrophic in the long muscles of the extremities, where the nerve supply is thus completely severed, the nerve supply to the rectus muscle is segmental and enters from its lateral border. Transection of the rectus severs no motor nerves. Muscle splitting does. And it is quite unnecessary to suture the ends of the severed recti. There is almost no retraction, especially in the upper abdomen, as the tendinous intersections firmly hold the muscle to the anterior sheath. On opening such a wound it is often almost impossible to demonstrate the point of muscle division. Even where the abdomen is opened soon after closure, muscle healing is quite amazing.

In the lower abdomen, Cherney transects the fibrous tendinous parts of the recti. These, of course, are readily re-united by firm suturing.

For cholecystectomy we use a transverse incision extending from the midline to a point anterior to the lower costal cartilages. The right rectus is transected. The lateral portion of the superficial wound is pulled downward slightly, and the muscles lateral to the rectus are split apart. In one-third to one-half of the cases the obliques and the margin of the latissimus dorsi are also transected for a short distance. No ligatures are used. All bleeding is quickly controlled by electrocoagulation. The posterior rectus

sheath and peritoneum are opened transversely. Excellent exposure results, even in the obese patient. Closure of the fascial layers of the lateral muscles up to the margin of the rectus is done with running sutures of chromic 0. The rectus is wide at this level, so the posterior rectus sheath forms the main part of the closure. This is firmly accomplished with figure 8 sutures of 00 silk or heavy cotton, catching fascia and peritoneum. The same sutures are placed in the anterior sheath, where wire may be used if desired. No sutures are used in the muscle. The superficial fascia is closed with interrupted sutures of fine nylon. A subcuticular suture of 000 plain catgut is placed in the skin. No retention sutures are used, no large strips of adhesive; no binders are applied.

For gastric or any sub-diaphragmatic surgery, or any extensive surgery of the upper abdomen, we very much like a curved incision, convexity upward, starting from the costal margin laterally, curving across a short distance below the xyphoid process, and continuing clear across to a corresponding point on the other side. Both recti are transected. Lateral muscles are split apart, to some extent incised. Exposure is gratifying. Some of these incisions are 18 inches long, and the patient looks as though he had committed hari-kari. Infrequently a narrow, high arched patient gives a better view with a short midline extension upward. Closure is the same as in the cholecystectomy incision, starting with two firm figure 8 sutures in the midline. Again, no retention sutures are used.

For a number of years we have standardized our appendectomy approach, using a transverse incision starting in the midline approximately at the level of the anterior superior spines. It passes laterally, curving slightly upward following the lines of Langer. It is carried through skin, superficial fascia, and anterior rectus sheath. In this instance the rectus is not transected but is freed from the anterior sheath, retracted medially along with the inferior epigastric vessels, and held there by the assistant. The posterior sheath and peritoneum are incised transversely. Most appendices are easily reached. If one is found to be lateral or down behind the cecum, the incision is carried across the linea semilunaris, and the muscles are split laterally as far as necessary. Again, exposure is excellent. Closure is simple. A single strand of chromic 0 with a swedged-on needle is placed as a running suture in the posterior sheath, starting medially, continuing laterally to the muscle margin, back across the anterior sheath to the midline. Fine nylon is used in the superficial fascia, plain 000 subcuticularly in the skin.

Now I must make a confession. For pelvic surgery I still prefer the midline incision from the umbilicus to the pubic symphysis. And I mean clear

down between the recti to the pubic bone. If it goes clear down it is rarely necessary to go above or to the side of the umbilicus. It has seemed more satisfactory than either the Pfannensteil or the Chorney incision. Maybe it is just habit again, but I have switched back and forth a few times and always end up in the middle.

But the closure technique is extremely important. With proper care, this incision heals as strongly as any, but not unless certain details are scrupulously followed. First, the peritoneal margins must be everted to prevent adhesions to the underlying viscera. Waugh at Rochester stressed this years ago, and I bless him every time I re-open an abdomen and find a scar free from intra-peritoneal attachments. We use our swedged-on needle with chromic 0, placing a running, mattress, lockstitch. The rectus muscles are brought together in the midline with a loosely placed running suture of plain gut. This adds little, if any, strength, but it obliterates the dead space and keeps the anterior and posterior rectus sheaths apart. The anterior sheath is closed with mattress sutures of 00 silk, heavy cotton, or wire. This, we believe, is important. Catgut, running or interrupted, is inadequate. Simple sutures across the wound edges, or even figure 8's, invite shredding out and disruption. Only a mattress suture which ties around bundles of transverse fascia fibers can give a firm, safe closure. It is simply another case of avoiding a nail in the end grain. Once more the nylon is used, then the 000 plain subcuticularly.

That nylon and plain catgut subcuticularly require a little explanation. The former was introduced to me by Dr. Thomas P. Butcher of Emporia. It is nothing more nor less than Coates and Clark's black nylon thread, size A, purchased at the department store. Since I first tried it, I must admit that the price has advanced twice, 60 per cent, then another jump of 20 per cent. (By the way, there are 100 yards in each spool, so I suppose that even as much as 10 cents per spool is not exorbitantly expensive.) It is smooth; it is tough and hard to break; it is non-irritating to the tissues. I have never seen it spit out as cotton so frequently does. Being smooth, it requires a tight, firm, third throw on each knot. For tiny needles it requires a little more care in threading. The small French eye needles are convenient for this. But we like this nylon immensely for all sutures in the fat where catgut produces so much more reaction. We use it routinely for anastomoses of the alimentary tract, for hernia repairs, for any skin closure where catgut is inadvisable. We do firmly believe it makes for a much better healed wound if all dead space in the fat is entirely eliminated. This fine nylon is excellent for that purpose.

Practically all of our abdominal wounds have the

skin closed with subcuticular 000 plain catgut. Several years ago I pondered on the routine skin closure of perineoplasties utilizing catgut. If so successful in that area, why not in a clean abdominal wound? Several sizes of chromic and plain catgut were tried. Chromic lasts too long. As long as 30 to 50 days later there is sometimes a marked reaction under the skin. The fine 000 plain is most satisfactory. A stitch is placed in the superficial fascia under the skin at one end of the wound, with the knot deep in the fat. This stitch is left long. A similar stitch is then started in the fat of the other end of the wound, the knot underneath, deep in the fat away from the skin. This suture is carried the length of the wound in the deepest layer of the skin. Each stitch is pulled tight as it is placed, and finally the last stitch is reversed, turned back one stitch, tied tightly to the short length previously placed there. The suture is pulled up so it may be cut close against the knot, which then snaps down under the skin and disappears. There is no penetration of the skin. Each stitch is carefully placed just under the deep edge of the skin. Bites must be short but fairly close together. If bites are too long or too close together, there may be necrosis of the skin margin. It is the deep portion of the skin only which heals strongly, so each stitch must be pulled up snugly. The superficial layers of the skin just fall together. In 5 to 10 per cent there will be a little serous ooze from between the skin edges at one end or the other (over the knots). This is of no consequence. Wipe it away with an alcohol sponge.

For postoperative dressing a narrow, light gauze strip is applied with 1/2-inch adhesive tapes three or four inches long. The gauze serves only to blot up the slight bloody ooze from the skin edges. It is removed on the first postoperative day; there are no dressings thereafter. Only the patient's shirttail is pulled down over the wound. The results? A wound which is unbelievably less painful to the patient than one where sutures penetrate through the skin; a wound that heals quickly, is dry and clean, and not sensitive to pressure, to clothing or to active motion; a wound that heals as a narrow line with no stitch marks; and—a joyful lighting up of the patient's face when you tell him, "There will be no stitches to take out."

Please note: retention sutures have been discarded entirely. No supporting large bands of adhesive tape or ABD pads are used (excepting drainage cases, of course). There are no abdominal binders. Our patient is ambulatory on his first postoperative day, on the operative day if he likes. And yet, with this technique as a routine in nearly 400 cases, we have had not one case of disruption of the wound, not one postoperative hernia, not one wound infection in any

clean case. Our appendectomy patients are usually discharged by the fourth day, most of those who have had cholecystectomies, hysterectomies and hernioplasties by the end of the week.

Most surgeons will think this too "puttery" a routine to bother with. Of those of you who do try it,

many will be unwilling to spend the extra effort and time to continue it. Most of us are in a hurry. But if there be among you any of the finicky old spinsterish type who are willing to fuss a while over little details, I firmly believe you will eventually find it a gratifying closure routine.

Sunlight and Cancer

Herbert L. Ketterman

Kansas City, Kansas

In 1894 Unna¹ pointed out that prolonged exposure to sunlight might give rise to malignant tumors of the skin. Hyde,² writing in 1906, used statistics on the prevalence of cancer of the skin in various occupations and in various geographical locations to eliminate wind, heat, and frostbite, for example, as causes of skin cancer. He concluded: "It would seem that exposure to light and to light exclusively is the special stimulant provoking a certain proportion of the skin to the metamorphosis that means carcinoma."

In 1928 Findlay³ reported that white mice manifested "papillomas and malignant epitheliomas" after eight months of daily three-minute exposures to radiation from a mercury vapor lamp. This work has been repeatedly confirmed with variations on mice and rats, using light from a mercury vapor lamp and sunlight with various lengths and intervals of exposure.

Blum⁴ subjected albino mice to carefully measured doses of ultraviolet radiation which were given at regular intervals. After a considerable number of doses, tumors appeared on the ears of the mice, the time of appearance depending upon the size and frequency of the dose. Histopathological examination showed that the tumors were malignant and predominantly sarcomas. Grady, Blum and Kirby-Smith⁵ as well as other investigators who have exposed mice to ultraviolet radiation have noted a much higher percentage of sarcomas than carcinomas.

Malignant tumors of human skin are nearly all epithelial, i.e., carcinomas in contrast to the ultraviolet radiation induced sarcomas of mice. The ultraviolet rays are virtually all absorbed in the epidermis of man, and it is here, where only epithelial cells are present, that human cutaneous cancer appears. The ultraviolet rays penetrate much deeper in the mouse

to reach connective and other non-epithelial tissues, thus accounting for the high proportion of sarcomas.⁶

By use of appropriate filters it has been shown that the maximum carcinogenic rays are those of wavelengths between 2,600 and 3,000 angstrom units which lie in the same spectral region (ultraviolet rays) as those which produce erythema of "sunburn" and antirachitic effects of sunlight.⁷ It is the short wavelengths (ultraviolet rays) of sunlight which penetrate tissue easily and produce their physiological effects slowly. The converse is true for wavelengths in the upper portion of the sunlight band (infrared radiation), whereas the central portion of the band has little known effect on the skin.⁸

The mode of action of ultraviolet light in the production of cancer is as yet not clear. However, it has been suggested that some disturbance in the proteins or nucleic acids might be responsible. This receives strong support from the fact that the absorption maximum of nucleic acids is about 2650 angstroms and that of proteins about 2800 angstrom units. This corresponds closely with the carcinogenic portion of the spectrum. It is to be expected, therefore, that various disturbances in these components might result from ultraviolet irradiation, and it seems not unlikely that such disturbances would have a profound effect upon cellular behavior.

Blum⁹ has reviewed the pathology of acute solar erythema. Ultraviolet rays are chiefly absorbed by the cells of the horny and the malpighian layers; a small fraction may reach the papillary layer of the cutis. The molecular action of ultraviolet rays on the protein of the epidermal cells results in the liberation of vasodilator and leucotactic substances; these reach the cutis by diffusion after a significant time lag—the "incubation period" of solar erythema. Vasodilation, leukocytosis, and edema result in the corium, and

Student, University of Kansas School of Medicine.

cellular degeneration occurs in the epidermis. This stage is soon followed by a reparative reaction ending in restitution and hyperplasia of the epidermis, which is shared by all layers except the basal, and by absorption of the inflammatory exudate in the cutis. Melanization of the epidermis occurs and extends through all layers of the rete, often into the horny layer. With the exception of the pigmentary response, the process does not differ materially from any ordinary inflammatory reaction at any other site of the body.

Clinically, complete repair with pigmentation is usually attained; if, however, the epidermis has been completely destroyed, scarring ensues. The hyperplasia of the horny layer, which may persist up to two months, is chiefly responsible for the resistance against further irradiation shown by the recently sunburned. The cells of the epidermis are incapable of developing immunity against repeated solar trauma; after a variable interval, normal sensitivity returns even though pigmentation may still be marked.

The mechanism of chronic sunburn is less well understood. The frequent repetition of the stimulus of solar radiation apparently leads to an exhaustion of the reparative forces, and irreversible changes take place in the cutis. The changes affect at first the supporting and elastic fibers of the corium and the blood vessels; eventually epidermal changes supervene which result in atrophy, permanent freckling, areas of depigmentation, persistent desquamation, keratoses, and possibly carcinoma.

Many of these changes may appear in later life in the individual who has spent all or most of his life on farms, and it is the blue-eyed, blonde, and pink-skinned individual who is most susceptible. Early changes are a dryness and wrinkling of the exposed skin which become progressively more severe. Permanent freckling over the dorsal surfaces of the hands, cheeks, and ears is seen. Over a period of several months or years, small horny excrescences develop; these senile keratoses belong in the group of skin premalignancies. If not adequately treated, these senile keratoses continue to grow, and the underlying skin becomes infiltrated with a hard, nodular, pearly infiltrate which is already a squamous cell carcinoma.¹⁰

Carcinomas of the skin are divided into two main types, the basal cell carcinoma and the epidermoid carcinoma. The early basal cell carcinoma usually has a gray somewhat translucent appearance and may be present as a small nodule beneath the thinned out overlying epithelium. In large basal cell carcinomas, areas of yellowish necrosis are frequent. The epidermoid carcinoma, often keratinizing, may show yellowish-gray areas on cross section. The large epidermoid carcinoma with an ulcerated surface is heavily infected.

The evolution of the process of development of skin carcinoma varies. Fifteen or 20 years may be necessary to produce the carcinoma, but malignant lesions have occurred in a matter of a few months.

It has long been known that there are certain individuals who are highly susceptible to carcinoma of the skin. As has been mentioned previously, there is a much higher incidence in patients who work under strong exposure to the sun. In 200 cases studied by Roffo,¹¹ 97.8 per cent of the patients were farmers, field hands, bricklayers, seamen, etc., whose occupation necessitated exposure to sunlight over the years. The most frequent ages involved in this series were between 61 and 70 (29.7 per cent), whereas octogenarians accounted for only 8.7 per cent.

Another factor to take into account in the production of this process is the biology of the skin. It is indubitable that there exist skins with greater or lesser predisposition toward solar erythema, a predisposition connected with the absence of pigment. It is the white skin, especially of blondes, which seems to be most sensitive. The white person's skin is 10 times more sensitive to ultraviolet rays than the Negro's skin.¹²

Piers¹³ reported on a series of 51 cases of cutaneous cancer he had seen between 1941 and 1947 in Kenya. Forty-five of these were basal cell carcinomas, the cheeks and nose being the most common sites. The ages of the patients ranged from 29 to 89 with one-third of the cases in patients between 60 and 69. Thirty-seven of the 51 patients gave a clear history of long occupational exposure, and in 34 patients chronic sunburn was present. He concludes that sunlight is the paramount factor in the causation of cutaneous carcinoma in Kenya.

Molesworth (cited by Piers¹³) stated in 1937 that cancers of the skin in Australia exceed in number those of all other organs, and that 99 per cent of these are due to chronic sunburn.

In a series of 5,000 cancer cases observed before 1928 at the Institute of Experimental Medicine for the Study and Treatment of Cancer in Buenos Aires,¹¹ the great frequency of cancer of the skin was notable. The regions most often attacked were as follows:

1. Carcinomas of the skin of the face 95.51%
2. Carcinomas of the dorsum of the hands .. 3.07%
3. Carcinomas of the scalp 1.02%
4. Carcinomas of the foot 0.40%

Furthermore, this relationship with intensity of solarization of the skin is attested even more if consideration is given to the frequency of carcinoma of the face, the nose showing the highest percentage as it is the most exposed part. The following summary gives percentages affecting the different parts of the face:

Nose 61.4%

Maxilla	18.0%
Forehead	7.7%
Ear	7.9%
Temple	4.0%

SUMMARY

Five major lines of evidence supporting the concept that sunlight is a causative factor in the production of skin cancer have been discussed. These lines of evidence are: (1) Cancer of the skin of laboratory animals (mice and rats) can be induced by exposure to ultraviolet radiation; (2) Cancer of the skin is more common among outdoor than indoor workers; (3) Cutaneous cancer is less prevalent in Negroes than in the white races, presumably because the former are less susceptible to sunlight; (4) The incidence of cancer of the skin is greater in regions of the earth that receive high insolation; (5) Cancer of the skin occurs principally on parts of the body most exposed to sunlight.

None of these lines of evidence is completely convincing in itself, but, as evidence accumulates, it con-

verges in a striking manner to support the conclusion that sunlight is a major cause of cancer of the skin.

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Although it is not the privilege of every physician to serve on the firing line through active participation in medical organization work, nearly everybody can serve in the splendid work being done by the American Medical Education Foundation and the World Medical Association. How can alumni of medical schools fail to recognize that it is their obligation to contribute according to their means to the American Medical Education Foundation and thus forestall government subsidization of medical schools and the ultimate socialization of the practice of medicine? What valid excuse can physicians have for not supporting the World Medical Association, which has been so helpful in cementing international physicians' relations and improving medical care throughout the world?

J. D. McCarthy, M.D., Chairman

A.M.A. Council on Medical Service



"Every operation in surgery is an experiment in bacteriology. The success of the experiment depends not only on the skill but also upon the care exercised by the surgeon in the ritual of the operation."

"In the transition of a patient from ill health to sound health the operation itself is only one—though it may be the most important—of all the factors concerned in this fortunate event."

"After this point [the incision of the skin] the use of antiseptics in a 'clean' case is rarely necessary, is often undesirable, and is almost always of greater harm than benefit. It is to insult tissues and to doubt them, when it would be better to trust their very considerable powers of self-defence."

"Surgery should be a merciful art. The cleaner and the gentler the act of operation, the less the patient suffers, the smoother and quicker his convalescence, the more exquisite his healed wound, and the happier his memory of the whole incident, to him probably one of the most important in his life."

"It would be well if surgeons the world over took a little more pride in the wounds they inflict. The appearance of a wound is often the best index to the quality of the work that has been done throughout the operation."

"It should be our ideal to complete such an operation [thyroidectomy], which in my student days was often one involving much loss of blood, without staining the towels round the wound."

"Throughout the operation there must be no undue exposure of parts. . . ."

"The most important person present at an operation is the patient. . . . It is our duty to make the operation as little disagreeable as possible for him."

"Every detail in every operation is of importance, and should be conceived, practised, and tested with unwearied patience by the

operator himself, and by him in conjunction with all his assistants. In surgery, at least, success may well depend upon the scrupulous, exacting, and unceasing supervision and close scrutiny of every smallest incident of procedure."

"In all the movements of the surgeon there should be neither haste nor waste. It matters less how quickly an operation is done than how accurately it is done. Speed should result from the method and the practised facility of the operator, and should not be his first and formal intention. It should be an accomplishment, not an aim. And every movement should tell, every action should achieve something. A manipulation, if it requires to be carried out, should not be half done and hesitatingly done. It should be deliberate, firm, intentional, and final. Infinite gentleness, scrupulous care, light handling, and purposeful, effective, quiet movements which are no more than a caress, are all necessary if an operation is to be the work of an artist, and not merely of a hewer of flesh."

Do you know or can you guess the source from which these quotations were taken? Do they sound up-to-date? Are they not all pertinent to today's surgery? Could we not improve our own surgery if we could remember and achieve each of these principles?

For some it may be a surprise, but to others it will not, that all these quotations are from an address entitled "The Ritual of a Surgical Operation," given by Lord Moynihan* in 1920. Offered to the profession 34 years ago, they are still as appropriate as at that time and serve as an example of the vision, understanding, and art of a master surgeon. All that is old in medical literature is not obsolete; much is basic and is useful and apropos for an indefinite period of time. A perusal of the writings of the master physicians and surgeons of yesteryear will furnish us both information and inspiration.—O.R.C.

* First published in the *British Journal of Surgery*, 1920, and reprinted in a collection of "Essays on Surgical Subjects" by Berkeley Moynihan (W. B. Saunders Company, 1921).

PRESIDENT'S PAGE

DEAR DOCTOR:

As this is being written, the New Year appears to bring with it a few problems that I wish could be settled by making a few good resolutions. One of these merits special consideration.

Your committee has had numerous meetings with a like committee representing the osteopathic profession in an effort to find a common foundation to support an adequate medical legislative structure. While these conferences have been candid in nature and at times quite heated in discussion, it cannot be said that there has not come from them an increased understanding of our common problems.

Throughout the entire negotiations the members of your committee have always maintained the same position, that we will actively oppose any legislation we feel is not in the best interests of the citizens of our state, and that we will propose, introduce, and actively support measures to improve medical care of our citizens.

Your Society will continue to press for increasing standards of medical training and medical care and will attempt as strongly as possible to so influence our legislators.

It is, therefore, up to you to give them your experience, your wisdom, and your most earnest advice in all matters pertaining to public health and medical care.

Yours very truly,

Murray C. Eddy, M.D.

EDITORIAL COMMENT

OUR NEW COVER PAGE

In January 1935, exactly 20 years ago, the JOURNAL presented its first distinctive cover page, without advertising, and including the now-familiar figure depicting a modern stethoscope and an original type stethoscope used by Laennec. This little figure was designed specifically for the JOURNAL as being symbolic of medical practice. Brad Thompson, the artist, was a personal friend of Dr. W. M. Mills, the editor at that time.

Twice since that date—in 1941 and again in 1942—the cover design was again changed, and each time this distinctive figure was incorporated in the new cover page, so that now it has become as much a part of the JOURNAL as any of the features on the inside and is something which is ours alone.

After 13 years without change, the little familiar figure has put on a new suit of clothes, and we are particularly pleased that again it was possible to have it designed by Mr. Thompson, now the art director of *Mademoiselle*. He was willing to do it once more, primarily because of his personal friendship for two former editors of the JOURNAL, Dr. Mills and Dr. Pyle. We are proud to present the JOURNAL to you in its new cover, first because we think it is attractive, then because it retains the now-traditional figure designed by Mr. Thompson, and finally because he has again helped to dress up our cover page. We of the Editorial Board are greatly indebted to "Brad" for his kindness in doing this work for his friends "back in the old home town," and want to take this opportunity to say "thank you" to him. We hope that all will like the new cover, and we believe that it is a step toward a better and more attractive JOURNAL.

FEDERAL AID IN KANSAS

PART IV

This portion of the report on federal grants to Kansas deals with the welfare program. As in previous sections, this is a factual review without editorial comment or opinion. The entire series, with material largely taken from research conducted by the Kansas State Chamber of Commerce, is for the purpose of informing the medical profession on some phases of governmental activity in Kansas. It should also be noted that the latest available figures are generally for the year 1953, so they do not necessarily reflect the present situation.

There are 11 federal grant-in-aid welfare programs

in Kansas, all of which fall under one of the major categories listed below.

PUBLIC ASSISTANCE

The federal government provides funds for the operation of four public assistance programs. The Social Security Act of 1935 made three of them possible, and the fourth came into being following a 1950 amendment. Kansas participated in the three as of August or September 1937 and in the fourth as of October 1950. The money for all comes from the Department of Health, Education, and Welfare. These programs are administered in Kansas by the State Department of Social Welfare and at the county level by the 105 County Departments of Social Welfare.

The first of these is for Old-Age Assistance which offers financial aid to needy individuals over the age of 65 years who are not living in a public institution. Funds under this program are in addition to old-age and survivors insurance also paid by the Social Security Administration.

The payment formula has frequently been misunderstood. In each monthly grant the federal government pays four-fifths of the first \$25 and one-half of the next \$30, but nothing beyond those amounts. Also received from federal sources is half of county and state administrative costs.

There are 11 principal federal requirements which must be met before this program may be placed into effect. It must be in effect in all political subdivisions of the state, it must be administered by a single state agency, and the state must participate financially in the plan. Reports must be submitted, there must be a merit system in the state, clients must be given a right to appeal. Other income must be individually taken into account in determining need, there must be safeguards as to information, states may not make a higher age requirement than 65 years, no citizenship requirement may be made to exclude any citizen of the United States, and, finally, residency requirements may not exclude anyone who has lived in the state five of the last nine years and the last continuously.

Under Old-Age Assistance in 1953, Kansas received \$14,298,939 from federal sources and spent \$8,565,912 state funds and \$5,200,000 county funds for a total of \$28,064,851. This has increased every year in each category, now being almost double the 1947 figures.

The second public assistance category is Aid to Dependent Children, which provides financial assistance to needy children under 16 years of age, or 18 if they are in school, who are deprived of parental support by reason of death, absence, or incapacity of a parent.

Here the formula for federal aid goes as follows: Federal participation is four-fifths of the first \$15

of each eligible child and of the relative with whom the child is living. Then one-half the remainder up to \$30 is paid for the first child in the household and half up to \$21 for each additional child in the same home. Again half of the state and county administrative costs are paid. In general, requirements are similar to those outlined above except for a change on age and a relaxation of residence regulations.

This program has been relatively constant in cost over the years, a little higher than in 1947, a little lower than in 1952. In 1953 the federal government gave \$2,690,748, the state \$1,387,078, counties \$1,117,252 for a total of \$5,195,078.

The third category is Aid to the Blind, and it gives aid to needy blind persons who are not living in an institution. The federal participation formula and the federal requirements are very similar to those applicable for Old-Age Assistance. The cost is far less and has remained nearly constant over the years. In 1953 the federal government contributed \$240,004, the state \$160,981, and the counties \$99,896 for a total of \$500,881.

The fourth category, Aid to Permanently and Totally Disabled, called Aid to Disabled in Kansas, was the most recent addition to the public assistance program, being started in 1950. It is available to needy persons 18 years of age or older, not living in an institution, who are disabled in mind or body to the extent that they are unable to follow any substantially gainful or useful occupation, trade, profession, or service. The formula and requirements governing federal participation are similar to Old-Age Assistance except that medical certification is necessary. In Kansas this program has grown since its beginning to 1953, when the federal government paid \$1,130,245, the state \$657,229 and local sources \$554,021 for a total of \$2,341,495.

CHILD WELFARE SERVICES

This program began in Kansas in 1936 and is federally administered through the Social Security Act of 1935. It is administered in this state by the Department of Social Welfare, and there is no local participation. Its purpose is principally for providing services rather than financial aid for dependent, neglected, or homeless children who are in danger of becoming delinquent.

The federal government annually appropriates up to \$10,000,000 for this work, allots \$40,000 to each state, and divides the remainder according to the relative rural population of children under 18 years. A further point is that this project is specifically designed for rural areas. There are no matching funds required, but the program is arranged on a contract basis.

In general, this program is expanding in Kansas

from a total of \$93,069 in 1947 to \$287,241 in 1953. Last year the federal grant to this state was \$121,257, and Kansas spent \$165,984.

A second project under this heading is for crippled children's services, operated in Kansas since 1937. Federal participation is again through the Department of Health, Education, and Welfare. State administration is by the Crippled Children's Commission. There is no local agency involved.

The purpose is to locate crippled children and to provide corrective and other services for them. The program pays for medical care, hospitalization, and appliances. It conducts diagnostic clinics. The Kansas law makes children under the age of 21 years eligible if their parents are unable to pay either all or part of such necessary care. Harelip, cleft palate, congenital cataract, orthopedic deformities including results from poliomyelitis and from burns are representative conditions that may be cared for.

AID TO EDUCATION

There are numerous federal aid programs in the field of education, most of which were discussed last month. In addition to those are two welfare projects. The first is called Vocational Rehabilitation of the Blind and became operative in Kansas in 1943. At the federal level this is a part of the vocational education grant, but it is separated in Kansas where the Board of Vocational Education handles all but this portion of the work which is under the direction of the Board of Social Welfare.

In general, the federal government pays all the cost of administration, all the cost of vocational guidance and placement services, and half the cost of training, medical and hospital care, etc. The purpose is to prepare blind persons for economic independence. The program corrects all possible physical defects, trains the patient for employment, and purchases necessary equipment.

The cost has steadily increased since 1947 when the total for Kansas was \$17,712 to 1953 when it was \$65,552. For 1953 the federal government paid \$46,200 and the state \$19,352. There is no local participation.

The second program is a federal grant for Education of the Blind, operating in Kansas since 1879. The Office of Education administers this at the federal level and the Board of Regents locally. The service is to prepare and distribute books in Braille and other teaching materials for blind persons. Figures for 1953 are not available but in 1952, \$1,282, all from federal funds, was spent in Kansas.

HOME FOR DISABLED VETERANS

Since 1895 federal funds for veterans' care in a specialized home have been available through the

Veterans Administration. The program is administered in Kansas by the Veterans Commission. The federal payment matches state funds at the rate of \$500 a year per veteran cared for. In Kansas this is spent for the State Soldiers' home at Fort Dodge and, because of state legislative action in 1951, a considerable reduction has recently occurred. In 1953 the federal government paid Kansas \$8,387, and state expenses are not known. In 1952 the federal grant was \$12,569 and state support was \$232,673, but some of this was spent for non-veteran care.

SUMMARY

The above then are welfare programs in which the federal government shares the cost of operation. Grouping all together as listed in this category, Kansas received \$16,874,577 from federal sources and spent \$17,808,546 in state and county money. The federal welfare appropriations to Kansas are 1.4 per cent of the total spent in this field among all states. The national federal cost is just under two billion dollars.

HELP FOR THE AFFLICTED

The progress of medicine during the past 20 years, star-studded with the miraculous discoveries of penicillin, radioactive substances and the like, not only leaves one a little breathless at times but inclines one to overlook an occasional therapeutic gem. Such a gem is the hand talking chart reprinted on this page, the result of the efforts of Dr. Hamilton Cameron to bring some small measure of comfort to the aphasic patient who needs desperately to communicate with his world before it spins away from him forever.

Dr. Cameron was stricken by coronary thrombosis in 1943, followed by cerebral embolism which resulted in right hemiplegia and "complete" aphasia. While still very ill, he realized that the one thing he needed most was to be able to communicate with those around him. With this admirably objective approach to a painful personal problem, he thought out and ultimately devised, with the help of Dr. Alfred A. Richman, medical director of the Manhattan General Hospital, New York City, the simple chart below.

Lest readers infer that Dr. Cameron's interest in solving

problems is restricted to those with which he has had personal experience, it should be noted that his talents were directed toward aid for the unfortunate even before his own illness. After his graduation from Reliance Medical College, later merged with Loyola University in Chicago, in 1911, he began practice in the East. There he founded the Benevians, an organization which helped individuals advance in their chosen spheres of activity against odds. He was featured on the radio as the Benevian Visitor, philosopher to the sick, blind, and 'aged, calling on them at home and in the hospital.

Two and a half years after he was stricken, Dr. Cameron was able to express himself orally and have an artist make the drawings in the chart. He was given a three-year residency at Manhattan General Hospital for research on self-rehabilitation and for the development of techniques in this field.

The chart has been available to physicians and nurses in this country since 1945, and it is now distributed internationally in the 64 nations affiliated with the World Health Organization. Wall size charts are available to hospitals through the International Research Council, of which Dr. Cameron is founder and general director.

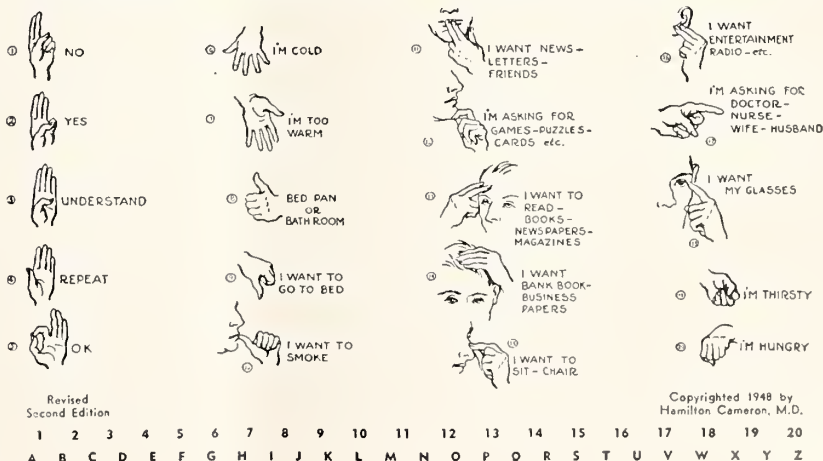
Physicians who wish more information may write Dr. Cameron at 601 West 110th Street, New York 25, New York.

MEDICAL PROVISIONS FOR TAX RETURNS

With the deadline for filing federal income tax returns extended to April 15 this year, few physicians are now concerning themselves with detailed analyses of provisions that are effective for the first time or changes that have been made in the law that formerly applied.

HAND TALKING CHART

The sign language in the designs speaks for itself. The figures and letters across the bottom are independent of the designs. By pointing with pencil or finger to the letters or figures needed to further a conversation, communication between patient and friend can be amplified even to the "dictation" of a letter by the patient who otherwise would remain completely inarticulate.



It is important, however, that all doctors have an understanding of the outline of the present tax structure, for it appears that more lay persons than usual, in preparing their returns, will assemble data on medical expenses. The law applying to income in 1954 is more generous than former laws in allowing medical deductions, so will therefore benefit a larger segment of the taxpaying public.

For some time elements within the medical profession have suggested that the cost of medical care could be reduced by altering tax laws to permit the deduction of every dollar spent for health purposes. This, they maintain, would also serve to combat propaganda issued by proponents of socialized medicine. There has been no indication that the suggestion will ever receive favorable action, but the changes now effective could possibly be construed as a step in that direction.

Formerly, no taxpayer could claim deductions for health expenditures unless the amount paid was in excess of 5 per cent of his adjusted gross income. This year all amounts exceeding 3 per cent of adjusted gross income are deductible. Allowable expenditures include amounts paid to doctors, dentists, nurses, and hospitals and payments for eyeglasses, artificial teeth, medical or surgical appliances, and premiums on health, accident, hospital, and medical insurance. Amounts paid for medicine and drugs, however, may be taken into account only to the extent that they exceed 1 per cent of adjusted gross income.

The new law also allows taxpayers to exclude from wages certain amounts received as wages for a period during which they were absent from work because of personal injuries or sickness. This amount may not exceed a weekly rate of \$100. If the absence was due to illness, the exclusion does not apply to amounts received for the first seven days unless the taxpayer was hospitalized for at least one day during the period.

There has been no change in the law affecting deductions for blind persons. Partially blind persons are defined as those (1) whose central visual acuity does not exceed 20/200 in the better eye with correcting lenses or (2) whose visual field subtends an angle no greater than 20 degrees at its widest diameter. Physicians may be asked to certify such findings.

The few paragraphs above give only a general outline of tax provisions which may be of interest to physicians. The principles governing these provisions are extended in some instances to dependents of taxpayers, with special deductions for those more than 65 years of age. Complete information is available in the pamphlet supplied by the Internal Revenue Service—with blanks on which the physician may complete his own return.

TRIBUTE TO A FRIEND

Editor's Note. The following tribute to the late Dr. A. Morris Ginsberg, clinical professor of medicine at the University of Kansas School of Medicine, was written by Dr. E. Grey Dimond, chairman of the Department of Medicine at the school.

The University of Kansas School of Medicine, and particularly its Department of Medicine, lost a loyal friend and advocate in the death of Dr. A. Morris Ginsberg.

Dr. Ginsberg experienced his first coronary occlusion about six years ago. However, he returned to an active practice, continued his teaching of medical students, and just one week before his death was at the school helping give senior oral examinations. His final illness began in his office while he was examining a patient. What more fitting stage for a physician?

His association with the medical school began the year he opened his office. Through the years his kindly, sympathetic approach to the sick and his equally kind and courteous conduct with students left vivid memories among the graduates of this school. Dr. Ginsberg conducted himself in a gentle, humane manner, softening wisdom with understanding and humor.

Those of us who have come to the school in recent years found a warm welcome from Dr. Ginsberg. His long association with the school and with the community's medical practice gave him depth and perspective and made him a wise and valued counselor.

Although to all of us Dr. Ginsberg personified the art of medicine, early in his career he conducted problems in research, especially in the field of coronary flow. One paper published in *Archives of Internal Medicine* almost 20 years ago (55:42, 1935) is still a standard reference. In that paper Dr. Ginsberg reported his experiences while working with Dr. Stotland in using 50 per cent glucose by vein with a resulting significant sustained increase in coronary flow. Other fundamental studies carried out over a period of 17 years resulted in 31 contributions to scientific publications.

In recent years his gifts to the school permitted annual awards for scholastic achievement and the establishment of a student loan fund, which the school gratefully named in his honor.

Dr. A. Morris Ginsberg will not be forgotten. The school, its students, and its staff learned and gained through the years of association. Throughout our state and wherever our students have gone, physicians will pause and say, "He was a gentleman."

PR PROGRAMS FOR COUNTY SOCIETIES

A new publication of the American Medical Association, *County Medical Public Relations Manual*, is now being distributed by the A.M.A. to state medical societies and will soon be available to county groups. Prepared by the Department of Public Relations, the booklet is a comprehensive textbook on public relations outlined for most practical use at the county level.

CANCER CONFERENCE IN MARCH

Eight guest speakers who are recognized specialists in their fields will participate in the seventh annual Mid-West Cancer Conference, to be held at the Broadview Hotel, Wichita, on Thursday and Friday, March 24 and 25. The program outline includes scientific sessions on both days with a banquet for physicians and their wives on Thursday evening.

Biographical material about two of the speakers was published in the December issue of the JOURNAL. Three more sketches are presented here, and the remaining three will appear in the February issue.

One of the two pathologists who will take part in the conference is Dr. Elson B. Helwig, Washington, D.C. Dr. Helwig is a professorial lecturer in pathology at George Washington University. He is especially interested in dermal and gastrointestinal pathology, and in 1954 he was invited to give the 20th annual seminar of the American Society of Clinical Pathology, the subject being dermal pathology. He is a diplomate of the American Board of Pathology and a member of numerous professional organizations. During World War II he served as executive officer of the 18th Medical General Laboratory and as consultant in pathology in the Pacific Ocean areas.

Dr. George T. Pack of New York, a surgeon, will make his second appearance at a Mid-West Cancer Conference this year. He spoke at the 1951 sessions and was so well received that he was invited again in 1955. Dr. Pack is clinical professor of surgery at New York Medical College and associate clinical professor of surgery at Cornell Medical College. He is attending surgeon at Memorial Cancer Center, New York, and of the Pack Medical Group. He holds membership in a number of surgical specialty groups and in ad-

dition is a diplomate of the American Board of Radiology.

An oncologist who will speak is Dr. Herbert Nagler of Philadelphia. He now serves as associate in medicine (geriatrics) at Hahnemann Medical College, oncologist at Lucien Moss Home for Incurables, and associate at the Home for the Jewish Aged, Philadelphia. Although he received his preliminary degree in this country, he completed his medical work abroad and won his medical degree from the University of Basle, Switzerland, in 1935. During World War II



he served as a flight surgeon.

In addition to the above, the following will take part in the program: Dr. Richard H. Chamberlain, Philadelphia; Dr. John R. McDonald, Rochester; Dr. Robert Dulaney Moreton, Fort Worth; Dr. C. C. Little, Bar Harbor, and Dr. Henry K. Ransom, Ann Arbor.

THE MONTH IN WASHINGTON

Editor's Note. The following summary of Washington news was prepared by the Washington office of the A.M.A. for distribution to state and regional medical journals.

Because this is a new Congress and under new leadership, a number of new bills can be expected in the health field. But the Democrats also can be expected to devote a vast amount of time to health legislation that was previewed last session by the Republicans.

In fact, one of the more prominent bills on the list, that providing federal reinsurance of health insurance plans, was subjected to lengthy hearings before it finally met defeat in the House late in the last session. So thoroughly was it dissected then that it will be surprising if the friends of reinsurance can find anything else favorable to say about it, or its critics can find anything else wrong with it. How this Republican bill will fare in Democratic committees now is one big question.

There is always the possibility, of course, that some of the major bills to be presented again will be so amended that new decisions will be called for. For example, the administration's experts all fall have worked tirelessly to make the reinsurance bill more palatable.





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Like the reinsurance bill, the proposal to revamp the procedure for distributing public health grants to states was well worked over last session. It passed the House, but the Senate committee was unable to untangle all the knots it discovered, so there was no final action. This, too, is up again this year, labeled as difficult and touchy but nonpartisan.

Another well-advertised bill coming up for action is that to set up a program of contributory health insurance for federal employees. Last session a Senate committee held a one-day hearing on this bill, admittedly merely to get the proposition "on the record" so it could be freely discussed between Congresses. A task force from the Civil Service Commission has been trying to hammer out a more workable version of the bill, and has found the task a formidable one. But despite the complications, Congress will be asked to enact some bill of this type.

Although the bill definitely is of Republican origin, there is no reason to expect that it will receive a hostile reception from the Democrats in either House. It is generally accepted as a too-long delayed attempt to bring the federal government into line with private industry.

The bill for expanding medical care for military dependents has about the same history. After months of planning and conferences, bills were introduced last year in House and Senate to get the idea out into the open for the benefit of Congress and the public. Because the plan is so highly controversial, however, no hearings were held last session. The same bill is going before Congress again.

Here the fundamental issue is whether military hospitals and uniformed physicians shall supply the preponderance of this service to dependents, or the dependents shall be treated largely by civilian physicians and in civilian hospitals.

Last session the Defense Department prepared the draft of a bill to set up a number of military medical scholarships. Because bills originating in one department that might affect another first must be submitted to the latter for comment, this bill was turned over to Mrs. Hobby's Department of Health, Education, and Welfare. There it rested until after Congress adjourned. The 84th Congress will be asked to enact the bill, possibly as an alternative to extending the Doctor Draft, which is scheduled to expire next July 1.

Efforts will be made, but not necessarily with the Eisenhower administration's help, to enact some sort of legislation for federal guarantee of hospital mortgage loans. This subject was gone into in great detail last session by Mr. Wolverton's House Interstate and Foreign Commerce Committee, but the committee finally turned down Mr. Wolverton and refused to report out the bill for action. It had wide-

spread labor support last year, but was opposed by the A.M.A. as discriminatory, in that it would offer more assistance to closed-panel practice than to other forms of medical practice.

Indications are that Mrs. Hobby's department will sponsor legislation to aid medical schools, a subject that was not taken up in the last Congress but that attracted considerable attention in years past.

HOUSE OF DELEGATES, A.M.A.

At the mid-winter meeting of the American Medical Association at Miami, December 2-5, Kansas was represented by its senior delegate and by the president of The Kansas Medical Society, Dr. Murray C. Eddy. Dr. Eddy served as alternate because one of our regularly elected delegates, Dr. George Gsell, was precluded from attendance by the death of his mother-in-law.

The House of Delegates digested and acted upon between 50 and 60 reports and resolutions. Here are a few examples.

OSTEOPATHY

Negotiations are completed for "On Campus" examinations of five of six schools of osteopathy to determine the quality of training therein. Committees for doing this are being arranged, and it is hoped that an unbiased report will be available for the A.M.A. in Atlantic City next June.

MEDICAL ETHICS

The resolution presented by Kansas to delete Section Eight of Chapter One relative to ownership of drugstores from the code of ethics was rejected by the House, though the Reference Committee admitted some changes might be advisable. A change in another part will allow patents to be acquired by physicians on remedies, instruments, and appliances so long as profit therefrom does not retard research or restrict benefits to the public.

DOCTOR DRAFT LAW

The majority opinion was to the effect that the present Doctor Draft Law should not be extended beyond June 30, 1955, when it automatically expires. The Board of Trustees and the Council on National Defense are requested to continue their efforts to assure adequate medical care for the armed forces. A more permanent solution to the problem seems to be the development of a career Medical Corps with adequate compensation for medical graduates.

RE-INSURANCE PROGRAM

The beautiful and talented Mrs. Oveta Culp Hobby, Secretary of Health, Education, and Welfare,

extolled the virtues of reinsurance and received a polite applause for her efforts. In rebuttal, Mr. Edwin J. Faulkner, president of the Woodman Accident and Life Insurance Company of Lincoln, Nebraska, presented innumerable reasons against its acceptance. His very practical approach was given a rousing ovation. We were glad Mrs. Hobby remained to hear his remarks. We were sure she noted the different receptions of the two speeches.

NEW A.M.A. GERIATRICS UNIT

This body on a national level is to aid state and county societies as well as the public in a liaison capacity relative to pertinent information.

HEALTH FAIR

To this delegate one of the most important and worth-while events was a Health Fair put on by the county, state, and national medical associations for the public. There were 18 exhibits on such subjects as Accidents, Nutrition, Heart, Alcoholism, and diseases, particularly those related to so-called public health. Briefly this was unsurpassed as a public relations medium as is witnessed by the fact that 15,000 people visited the fair in one day. About half of the exhibits were loaned by the A.M.A. The others came from various organizations such as the American Cancer Society, etc. Kansas could have a similar program concurrently with our state meeting.

Dinner Key Auditorium adequately housed scientific and commercial exhibits, and adjoining it on one side were four spacious halls devoted to Internal Medicine, Surgery, Motion Pictures, and Color Television, respectively. While we delegates are always limited as to time spent in scientific meetings because of policy-making responsibilities in the House of Delegates, we did manage to visit briefly all departments. We are, therefore, certain that the 4,000 doctors in attendance received all they could absorb. There were about a dozen Kansas doctors in Miami for the meetings. This is a rather small representation. We hope there will be a larger group in Atlantic City next June.

Respectfully,

*L. S. Nelson, M.D.
Senior Delegate*

A new policy regarding immunization against influenza has been agreed upon by the Surgeons General of the Army, Navy, and Air Force. Accordingly, vaccine was administered to service men before a November 15 deadline, usually the time of the onset of the usual winter respiratory diseases.

BLUE SHIELD

Statistics released recently revealed that the 75 Blue Shield plans are making payments to doctors approaching \$300 million annually. This represents an increase of 20 per cent over the preceding year.

These Blue Shield plans were able to return in form of benefits, on the average, 84.07 per cent of membership income with operating expenses being 11.23 per cent.

Private expenditures for hospital and medical care during this period were estimated at \$9,866,000,000. Blue Cross, Blue Shield, commercial insurance, union plans, and all other types of coverage provided benefits totaling \$1,919,200,000, according to the report.

Of the total private expenditures, 29 per cent went for physicians' services, 28.6 per cent for hospital care, 23 per cent for medicines and appliances and the balance for dental and miscellaneous services.

Total earned income for all carriers in the health care field totaled \$2,404,600,000. This income, broken down by category of carrier, is as follows:

Blue Cross	\$ 708,400,000
Blue Shield	280,200,000
Commercial Insurance	1,181,400,000
Community Non-Profit Plans ..	56,300,000
Union Health and Welfare Plans	81,700,000
Employer-Employee Plans	49,600,000
Prepayment Group Clinics	17,800,000
Miscellaneous	30,000,000 (approx.)

For every dollar invested in health insurance, 80 cents was returned in the form of benefits. This ranged from 50 cents for individual contracts written by commercial carriers to 100 cents in the case of student health service. Blue Cross paid 88 per cent of premium income in benefits, Blue Shield 84 per cent.

The preceding statistical information is significant in that it points out the tremendous progress made by voluntary health plans and, at the same time, reminds us of the magnitude of needs not yet fulfilled.

Since only 20 per cent of total hospital and med-

REGULAR FEATURE OMITTED

Readers of the JOURNAL will note that one regular feature, ordinarily supplied by the University of Kansas School of Medicine, is omitted in this issue. The series which alternates Clinicopathological Conferences and Tumor Conferences is omitted now but will be resumed in the February issue of the JOURNAL.

ical care expenditures were covered by some form of insurance for 1953, it is apparent that many areas of need in the health care field are still untouched so far as prepayment is concerned. Some of these areas are home and office calls, care in nursing homes, home care for prolonged illness patients, diagnostic coverage, x-ray and laboratory services in doctors' offices, and out-patient treatment. Many of these needs are difficult to insure because of the tendency for overuse; however, there is a great deal of clamor from the public for comprehensive coverage.

Perhaps of most immediate importance to prepayment plans is the problem of finding ways to offer comprehensive coverage for services that are considered insurable. For example, many persons covered by insurance feel disappointed when they have surgery and hospital care and find that their coverage is only a partial payment. They have budgeted for insurance and then have to budget an additional amount at time of service to pay the total bill. In many instances this "additional payment" is a substantial amount.

Blue Shield has attempted to solve at least part of this problem with a "service benefit" provision for lower income groups. Unless the income limit for service benefit members is kept realistic, however, this provision tends to defeat its purpose.

Kansas Blue Shield and Blue Cross are studying ways for giving more comprehensive coverage to their members at a rate compatible to steady, sustained growth.

ACTIVITIES OF MEMBERS

A paper by Dr. Lewis L. Robbins, Topeka, "Emotional Reactions to Frustration and Failure," was published in the November issue of *American Practitioner and Digest of Treatment* as part of a feature section on "Stress Situations."

Dr. R. R. Melton, Marion, suffered the loss of his office, equipment, and records in a fire on December 1.

Dr. Simon E. Hershorn, Wichita, is now a diplomate of the American Board of Radiology.

Dr. William J. Reals, Wichita, addressed the medical technologists of Sedgwick County on the subject of "Protein-Bound Iodine Determination" on November 17.

Dr. H. R. Wagenblast has been granted a leave of absence from the Wichita-Sedgwick City-County Health Department for a year of postgraduate study at the School of Public Health, University of California.

Dr. J. Robert Twinem, who has been practicing in Garden City for three years, is now associated in practice with Dr. Edmer Beebe in Olathe. Dr. Twinem is a graduate of the University of Colorado School of Medicine.

Dr. C. C. Nesselrode, Kansas City, was recently elected an honorary member of the board of the American Cancer Society.

Dr. Hansel Benvenuti, who resigned as medical director of the Sedgwick County Hospital, Wichita, on December 1, was replaced in the Wichita position by Dr. Verl J. Throckmorton, who recently completed a surgical residency at Wesley Hospital there.

The Hertzler Clinic, Halstead, announces that Dr. R. G. Holt, who was recently released from service with the Navy, is now a member of its staff.

Dr. James A. McClure recently completed 21 months of service with the Navy and has returned to his urological practice in Topeka. While in the Navy he served on Atlantic transport duty, at Corpus Christi, Texas, and at Bremerton, Washington.

Dr. C. J. Kurth, Wichita, spoke on "Business and Mental Health" before the Town Club of Business and Professional Women in Wichita last month.

Dr. Robert E. Riederer, Olathe, has been appointed physician at the Kansas School for the Deaf, replacing Dr. Houghton S. Albaugh, who resigned after 15 years in the position.

Dr. Frederick A. Gans, Salina, was speaker at a recent meeting of the 4-H Club of Salina School District 3. He spoke on health and safety subjects.

Dr. Newman V. Treger, Topeka, represented the medical profession in a recent program on vocational guidance for students at Topeka High School.

Dr. Charles V. Minnick, Junction City, announces that Dr. Murray F. Minthorn is now associated with him in practice. Dr. Minthorn, a graduate of the University of Nebraska College of Medicine, has just completed a tour of duty with the Air Force.

Dr. Howard E. Snyder, Winfield, was recently named a director of the American Cancer Society.

Dr. M. H. Waldorf, Jr., expects to be released from military service this month and will return to his practice in Greensburg. Dr. J. R. Bradley, who has been practicing in Greensburg, has received orders to report for service with the Air Force on February 21.

Dr. Ray T. Parmley, Wichita, was recently named a director of the American Society of Anesthesiologists.

Dr. W. Clarke Wescoe, dean of the University of Kansas School of Medicine, was one of the participants in a panel discussion held in Kansas City for the benefit of 84 physicians from foreign countries who are now taking training at Kansas City hospitals.

Dr. Richard B. Williams, formerly of Pratt, opened an office in Independence last month.

Dr. David H. Rau, Lyons, has been called to a two-year tour of duty with the Army. He was ordered to report at Fort Sam Houston, Texas, on January 2.

Dr. Homer L. Hiebert, Topeka, took part in a panel discussion on "Fundamental Problems in the Clinical Use of Isotopes" at the annual meeting of the Radiological Society of North America, Inc., held in Los Angeles, December 6-11. Dr. Frank E. Hoecker, professor of physics at the University of Kansas, conducted a refresher course on "Recent Advances in Clinical Radioisotope Technics," at the same meeting.

Dr. Mahlon Delp, professor of medicine at the University of Kansas School of Medicine, has been elected to membership in the American Clinical and Climatological Association. The group, founded in 1884, is restricted in membership to 175 doctors, with only five new members elected each year.

The Ball Clinic, Manhattan, announces that Dr. Howard M. Lamborn, Jr., has become a member of its staff. Dr. Lamborn, who practices obstetrics and gynecology, was graduated from the University of Kansas School of Medicine in 1942, served three years in the Navy, completed a three-year residency in Cincinnati, and has recently been practicing in California.

Dr. H. Alden Flanders has returned to practice with the Eddy Clinic, Hays, after spending 21 months in the Navy. His period of service was spent in the Pacific, aboard a transport during the Korean conflict and aboard a ship evacuating refugees from Indo-China in recent months.

DEATH NOTICES

Z. HOSEA SNYDER, M.D.

Dr. Z. H. Snyder, 84, an honorary member of the Washington County Medical Society, died at St. Anthony's Hospital, Hays, on December 9. He had been living in Hays since he retired from practice last summer, but before that time he had lived in Greenleaf and had practiced there more than 50 years. He was a graduate of the Keokuk (Iowa) Medical College.

RICHARD CLARK LOWMAN, M.D.

Dr. R. C. Lowman, 87, who had practiced medicine more than 60 years, died on December 20. An honorary member of the Wyandotte County Society, he was feted in 1951 as the oldest practicing physician in the area. He was graduated from Kansas City Medical College in 1890, and he began practice in Kansas City in 1901, specializing in surgery. He was a fellow of the American College of Surgeons.

HERBERT MELVILLE WEBB, M.D.

Dr. H. M. Webb, 77, an honorary member of the Allen County Society, died December 16 at the Veterans Administration Hospital, Kansas City, where he had been a patient since July. He received his medical education at Lincoln (Nebraska) Medical College, Eclectic, graduating in 1906. He immediately opened an office in Humboldt and continued to practice there until his retirement.

The following are new officers of the Wyandotte Academy of General Practice: president, Dr. Matthew R. Fitzpatrick; vice-president, Dr. Karl M. Rotluff; secretary, Dr. William D. Hawley, and treasurer, Dr. James B. Pretz.

Dr. Thomas F. Morrow, Wichita, who also serves as psychiatrist at Prairie View Hospital, Newton, spoke on "Elements of a Therapeutic Community" at the annual meeting of Meadowlark Homestead, Newton, last month.

Dr. John D. Hilliard, Medicine Lodge, was recently named coroner of Barber County.

The following physicians will serve as officers of the Topeka Blood Bank during 1955: president, Dr. Joseph E. Gootee; secretary, Dr. Robert H. O'Neil; board members, Dr. O'Neil, Dr. William H. Crouch, Dr. A. A. Fink, Dr. D. B. Foster, Dr. John W. Cavanaugh, and Dr. David E. Gray.

COUNTY SOCIETIES

Dr. Albert N. Lemoine, Jr., of the University of Kansas Medical Center, was guest speaker at a meeting of the Sedgwick County Society held in Wichita on December 7. His subject was "Strabismus in Childhood."

Members of the Auxiliary in Sedgwick County entertained their husbands and guests at a Christmas party and dance on December 15.

Dr. Herschel R. Turner, Hope, was host to members of the Dickinson County Society at a turkey dinner at the Legion Hall at Hope on November 18.

Dr. Kenneth J. Gleason, Independence, was elected president of the Montgomery County Society at a meeting held the latter part of the year. Dr. Hubert C. Martin, Coffeyville, was named vice-president, and two physicians from Independence, Dr. William G. Chappuie and Dr. Gerald C. Bates became secretary and treasurer.

A feature of the 53rd annual dinner meeting of the Shawnee County Society, held at the Jayhawk

Hotel, Topeka, on December 6, was the presentation of membership pins in the 85-50 Club to Dr. John A. Crabb and Dr. Elvenor A. Ernest. The club is composed of physicians who have attained the age of 85 or have completed 50 years of practice. Those who have become members in former years are Doctors William L. Borst, Michael A. Floersch, Ralph L. Funk, William H. Greider, Henry B. Hogeboom, Clarence H. Kinnaman, Charles H. Lerrigo, James H. McNaughton, John F. Northrup, Joseph C. Shaw, William L. Warriner, Charles L. Youngman, and George W. B. Beverly.

Speaker of the evening was Mr. Dave Livingston, Washington, Iowa. A short talk was also given by another guest, Mr. Basil O'Connor, president of the National Foundation for Infantile Paralysis.

The new officers of the group, to serve in 1955, are: Dr. D. Bernard Foster, president; Dr. Clyde B. Trees, president-elect; Dr. Charles S. Joss, vice-president; Dr. Willis L. Beller, secretary, and Dr. B. I. Krehbiel, treasurer. Dr. Howard E. Roberts was named to the board of directors, Dr. Byron J. Ashley to the board of censors, and Doctors William H. Crouch, David E. Gray, and Walter Mau to the medical service board.

A meeting of the Ford County Society was held at the Lora-Locke Hotel, Dodge City, on December 14. Dr. A. A. Fink, guest speaker from Topeka, discussed "Early Diagnosis of Cancer."

Dr. Eugene J. Bribach was elected president of the Atchison County Society at a meeting held at the home of Dr. Wayne O. Wallace, Atchison, on December 7. Dr. Francis I. Stuart was named vice-president, and Dr. Ira R. Morrison was chosen as secretary-treasurer. Other officers are censors elected for three-year, two-year, and one-year terms, Dr. Frank K. Bosse, Dr. G. A. Patton, and Dr. Wallace.

Dr. Royal A. Barker, Peabody, presented a paper on the causes and treatment of hematuria at a meeting of the Marion County Society held on December 7. The following officers for 1955 were elected: president, Dr. Herman F. Janzen; vice-president, Dr. Peter D. Enns, and secretary-treasurer, Dr. Wendell M. Tate.

A meeting of the Clay County Society was held at the Clay Center Hospital on December 8. Dr. William H. Crouch, Topeka, guest speaker, discussed erythroblastosis. At the business session the following officers were elected: president, Dr. Carl H. Ruff;

vice-president, Dr. Roy B. McVay; secretary-treasurer, Dr. F. C. Shepard. The same officers will serve for the hospital staff.

Members of the Wyandotte County Society met at the City-County Health Building, Kansas City, on December 21. Dr. William W. Abrams presented a paper, "Medical Preparedness for Civil Defense." A business session followed.

Dr. Paul Schraer was elected president of the Cloud County Society at a meeting held at Concordia on December 14. Dr. N. C. McCubbin was named vice-president, and Dr. Lindell C. Owensby became secretary-treasurer.

HEART RESEARCH AT K.U.

A new research project—in which an investigator will delve into the functions of the human heart—has been started at the University of Kansas Medical Center through the newly established McIlvain Biochemical Cardiovascular Laboratories, occupying five rooms on the fourth floor of the Medical Sciences Building.

Dr. Santiago Griscolia, who holds the "Established Investigator" award of the American Heart Association, will conduct the study. It will concern the chemical processes by which the heart muscle works normally as well as the enzyme, hormone, and electrolyte changes in heart disease.

The McIlvain trust was established in 1950 by the late Mrs. Frederic Ervine McIlvain, and a grant of \$54,000 was made to the medical center last April.

An additional grant of \$2,000 was awarded the laboratory last month by the Kansas Heart Association. This is in addition to the association's contribution to research on a national basis, 12 cents of every dollar received.

ATTEND A.M.A. MEETING

The following physicians from Kansas attended the American Medical Association clinical session at Miami last month: Doctors Henry S. Blake, W. M. Delaney, Dwight Lawson, Chester E. Joss, Manuel E. Pusitz, Clarence K. Schaffer, and Rudolph Chess of Topeka; Farris D. Evans and George L. Thorpe of Wichita; Loren E. Dickelmann, Hutchinson; Murray C. Eddy, Hays; Walter M. Furst, Norton; Ferdinand C. Helwig, Kansas City; L. S. Nelson, Salina; Marvin O. Steffen, Great Bend, and C. C. Underwood, Emporia.

MEDICAL SCHOOL ENROLLMENTS

A survey of applicants for medical training was made recently by the Association of American Medical Colleges and showed that availability of medical schools and a high per capita income in a given area have a bearing on the number who desire to enter the profession.

Various geographical areas in the country have about the same number of freshman places available in medical schools, with five per 100,000 population reported. The larger the number of practicing physicians in a state relative to population, the greater the interest in obtaining medical education, it was found. Number of colleges in the state is not necessarily related to the volume of the applications, nor is the per capita income of physicians a consideration.

For the country as a whole there has been an overall decrease in the number of applicants. Area-wise, the Middle Atlantic states lead with 14 applicants per 100,000 population. The national average is nine. The District of Columbia is first with 18 per 100,000, Nebraska second with 17, and Utah and New York third with 15.

Two-thirds of all freshman medical students enter schools in their own states, but many places are filled by out-of-state residents.

TELEVISION IN MEDICAL EDUCATION

A program on "The Potential Use of Television in Postgraduate Medical Education" will be presented at the Palmer House, Chicago, on February 5 under the sponsorship of the A.M.A. Council on Education and Hospitals. This is the first of a series of "workshop" type conferences on one particular aspect of postgraduate education.

Television is the subject of the first meeting because of the extreme interest shown in this medium recently. The program is planned to present both the educational and technical aspects of the subject so that hospital and specialty society representatives at the meeting will be able to obtain a broad picture of the medium and determine whether or not it is something they might use in their own programs.

The morning session will be devoted to considerations of the purely educational aspects of television. The afternoon session will deal with technical considerations and financing. Participants will be drawn from the fields of general education, television, industry, medicine, medical education, pertinent government agencies, and others. Demonstrations will be given showing actual camera chains and receiving equipment. The group will also visit a local television station in action.

Peripheral Embolic Arterial Occlusion

Eugene L. Petry, M.D.

Wichita, Kansas

Peripheral arterial embolism is not an uncommon medical and surgical emergency. Most often it is seen in patients with underlying cardiac disease, patients whose condition already is precarious. Thus the episode of embolism poses itself as an additional hazard to a severely ill individual. Unless diagnosis is prompt, unless treatment is adequate, the prognosis for life and limb is often grave.

ETIOLOGY

In a patient presenting signs of acute arterial insufficiency, the diagnosis of embolism depends upon demonstrating a source of thrombosis. Usually there will be a past history of cardiac disease, but the cardiac pathology may remain unsuspected until the occurrence of the embolic episode.¹ In series reported by various authors, the heart has been considered the site of primary thrombosis in from 60 to 96 per cent of cases.^{2, 3} Pratt⁴ reports that 80 per cent of peripheral emboli are associated with left sided heart disease and that 25 per cent of patients dying of heart disease have embolic episodes.

The cardiac pathologies encountered include rheumatic heart disease, myocardial infarction, arteriosclerotic heart disease, subacute bacterial endocarditis, thyrocardiac disease, and Cooley's anemia. It is not uncommon for surgical procedures on the heart to dislodge fragments of thrombus into the peripheral circulation.⁵

Extracardiac sources of thrombosis occur in pulmonary phlebitis, aortic and arterial aneurysms, or on calcific plaques in sclerotic arteries. Paradoxical emboli arising from sites of thrombosis in the systemic veins may gain access to the arteries of the extremities via interatrial septal defects. Groth⁶ has reported the embolic occlusion of the common femoral artery by tumor cells migrating from the pulmonary metastases of a sarcoma primary in the right tibia.

In those patients with cardiac disease, the historian may often develop the account of recent changes in the cardiac status:⁷ the onset of or changes in the severity of congestive failure; changes in rhythm; changes in digitalis dosage. Reynolds and Jirka state that embolism may occur with physical exhaustion;⁷ but Sprague and Westinghouse, in a review of 75

patients suffering 77 attacks of acute arterial occlusion, noted only 5 episodes occurring during or after unusual exertion, whereas 35 occurred during rest in a bed or chair.⁸ Operative procedure, the use of antibiotics, and digitalis itself may be additional predisposing factors to thrombosis.

The relative incidence of these varied etiologic conditions in arterial embolism may be observed in Haimovici's analysis of 330 emboli occurring in 228 patients.³

TABLE I
ETIOLOGY OF EMBOLISM IN 228 PATIENTS
(HAIMOVICI)

Rheumatic heart disease	40.4%
Myocardial infarction	31.5%
Arteriosclerotic heart disease	19.3%
Subacute bacterial endocarditis	4.8%
Pulmonary venous thrombosis	0.9%
Undetermined	3.1%

Rheumatic heart disease, the most common cause of embolism, warrants further discussion. Haimovici found it to be the etiology of 40.4 per cent of peripheral emboli; it accounted for 64 per cent of the emboli in Warren and Linton's series.² Approximately 5 per cent of patients with this condition will have emboli, and of these 60 per cent will have multiple episodes of occlusion.⁹ In a necropsy study of 178 rheumatic hearts, Graef¹⁰ found the incidence of auricular thrombosis to be 13 per cent.

The factors predisposing to thrombosis in a rheumatic heart are stated by Hay and Levine¹¹ to include the duration of disease, the persistence of rheumatic activity, the presence and duration of failure, the presence of mitral stenosis, the presence of auricular fibrillation, and the age of the patient. Their statistics show that thrombosis occurs three to four times as often in fibrillators as compared to patients with a normal rhythm. In another necropsy series it was found that 90 per cent of persistent fibrillators develop intra-auricular thrombi.¹² Haimovici reported the following incidence of cardiac defects in his patients with rheumatic hearts:

Auricular fibrillation	81.5%
Mitral stenosis	79.3%
Mitral regurgitation	55.4%
Aortic regurgitation	23.9%
Aortic stenosis	6.5%

Daley's group¹³ reported the incidence of fibrilla-

This is one of 11 theses, written by fourth year students at the University of Kansas School of Medicine, selected for publication by the Editorial Board from a group judged to be the best by the faculty at the school. Dr. Petry is now interning at Wesley Hospital, Wichita, Kansas.

tion and mitral disease to be 90 per cent and 97 per cent respectively in 194 patients with rheumatic hearts and embolic episodes.

Myocardial infarction is not uncommonly complicated by embolism. It has been reported that thrombo-embolic episodes occur in 15 to 25 per cent of those cases which do not receive prophylactic anticoagulants.^{14, 15, 16} It is probable that the incidence of thrombosis and subsequent embolism is related to the extent of necrosis, the presence of shock, and the development of arrhythmias. Gilchrist and Tulloch¹⁷ have noted an increase in the plasma fibrinogen following infarction, the titer reaching a peak in about one week. They relate the extent of elevation to the severity of infarction. In cases of silent infarction, the symptoms of embolism may be the first warning of danger and warrant a complete cardiac evaluation.

SITES OF OCCLUSION

Intravascular thrombi may embolize to any part of the arterial tree. The many factors determining the final resting place of the clot are not fully understood. Of importance are the size of the clot, the size of the vessels, and the force of the blood stream which carries the embolus. Occlusion almost always occurs at the bifurcation of arteries where the diameter of the vessel is markedly diminished. The higher incidence of occlusion in the lower extremities is explained, perhaps, by the lack of sharp turns for the embolus to encounter on its course. As is shown in Table II, the frequency of occlusion in the lower limbs is three to four times that in the upper.

TABLE II
COMPARATIVE FREQUENCY OF EMBOLISM TO THE ARMS AND LEGS

	Haimovici (330 emboli)	Warren & Linton (110 emboli)
Arms	16%	21.8%
Legs	75%	64.7%
Aorta	9%	13.6%

The site of occlusion is of specific importance in predicting the prognosis of the extremity, though one cannot ignore such important factors as the presence of local vascular disease, the duration of occlusion, and the extent of secondary thrombosis. The results following occlusion in the upper extremities are consistently better than in the legs. Similarly, gangrene is much less likely to develop if the obstruction involves small distal vessels rather than large, proximal mainstem arteries. Thus necrosis invariably follows embolic occlusion at the aortic bifurcation. The sites of occlusion found by Haimovici³ in 330 episodes of embolism are shown in Table III.

In Haimovici's series peripheral emboli accounted

TABLE III
SITES OF OCCLUSION BY 330 EMBOLI
(HAIMOVICI 1950)

Aortic bifurcation	9.1%
Common iliac	13.6%
External iliac	3.0%
Femoral	38.5%
Popliteal	14.2%
Posterior tibial	2.8%
Anterior tibial	2.8%
Axillary	4.5%
Brachial	9.1%
Radial	1.2%
Ulnar	1.2%

for 74.3 per cent of all embolic episodes in 228 patients. The incidence of peripheral embolization was 63.9 per cent in the group reported by Warren and Linton.

CLINICAL PICTURE AND DIAGNOSIS

The signs and symptoms of peripheral embolism are those of acute arterial insufficiency, the severity of symptoms varying with the degree of ischemia. The onset may be sudden or progressive. The initial symptom may be severe pain, but pain may not be apparent for several hours. The patient usually notes numbness, coldness, paresthesias, weakness, and paralysis. Examination of the limb reveals pallor and cyanosis, collapse of the superficial veins, lowered skin temperature, absence of the arterial pulses, hyporeflexia, hypesthesia, muscular weakness, and extreme muscular tenderness.

The sudden onset of severe pain traditionally has been considered the characteristic symptom of embolism. Some authors feel this to be so typical as to permit distinguishing embolism from occlusion by primary thrombosis. If one waits for such classical identification, many cases of embolism will remain undiagnosed. Saland¹⁸ was unable to distinguish between embolism and thrombosis on the basis of symptoms alone. Sudden severe pain is not a constant finding, being present in only 50 to 65 per cent of cases.^{2, 3, 18, 19} Haimovici noted sudden onset of pain in 50.5 per cent of cases, while in nearly 20 per cent the lesion was silent or the onset progressive.

TABLE IV
ONSET OF SYMPTOMS IN PERIPHERAL ARTERIAL EMBOLISM (HAIMOVICI 1950)

Sudden onset of symptoms	81.5%
Sudden pain	59.5%
Sudden numbness & coldness	21.7%
Progressive onset	11.7%
Silent occlusion	5.7%

The pain of embolism has been ascribed to vasospasm, impact of the embolus on the arterial wall, and to muscular ischemia. Lewis²⁰ denies that the instant of embolism is marked by pain. Reynolds and Jirka⁷ note that the site of impaction becomes tender only after inflammation has begun. Lewis believes

that the tissue in which pain originates is muscle, and that the onset and severity of pain are related to the activity and subsequent ischemia of the part. Thus a person resting quietly in bed may note pain only after several hours, but he will have progressive numbness, weakness, and coldness beginning about 30 minutes after the occlusion. On the other hand, the rapid increase of metabolites associated with activity will produce severe, rapidly progressive pain before the neurovascular symptoms are evident. It is thus important for the historian to note the time of onset, the progression of symptoms, and the activity of the part concerned at the time of occlusion.

The loss of arterial pulsations is not a reliable guide in determining the level of occlusion. Severe vasospasm following a distal occlusion may obliterate the proximal pulses; at other times pulsation may be felt several centimeters distal to the obstruction due to transmission of pulsations through the clot itself (Nordentoft's sign).²¹ Oscillometric studies are a valuable adjunct to digital palpation of the arteries and provide a more reliable method for determining the level of occlusion. Classically there may be found three oscillometric zones: a proximal zone of normal pulsation, a distal zone of absent pulsation, and an intermediate zone of diminished pulsation, the embolus lying near the proximal end of the intermediate zone.²¹ If an oscillometer is not available, one may use in its place a sphygmomanometer inflated a little above the diastolic pressure.²²

Examination of the extremity usually reveals a line of demarcation between the normal and ischemic tissue. If collateral circulation has developed, this line of demarcation may lie several centimeters distal to the level of obstruction. If the collaterals are markedly spastic, the line of ischemia may lie proximal to the embolus. The histamine flare test is considered by de Takats²³ as a useful means of determining the collateral supply. If erythema and a wheal fail to develop after the intradermal injection of histamine, the circulation is probably not adequate to preserve viability.

The diagnosis of embolic occlusion depends upon demonstrating a source of thrombosis in a patient suffering the syndrome of acute peripheral ischemia. At times, the source of thrombosis will remain unsuspected until suggested by the embolic episode. Embolism must be differentiated from other conditions which may cause acute ischemia: primary arterial thrombosis, acute thrombophlebitis, and thromboangiitis obliterans. If there is doubt as to the cause of ischemia, it is better to treat the case as embolism than to permit an undiagnosed embolus to condemn an extremity to gangrene or persistent arterial insufficiency.

Primary arterial thrombosis produces the same clinical picture as embolism but should be suspected

when one obtains a past history of prior vascular disease with symptoms of intermittent claudication, trophic changes in the skin and nails, and coldness of the distal parts. Acute thrombophlebitis typically does not produce ischemia, though in some instances the arterial spasm may be so severe as to obliterate the pulses and produce gangrene.²⁴ In such cases the spasm will be relieved by sympathetic blocks which permit prompt return of color, warmth, and sensation to the part. Patients with thromboangiitis obliterans will usually have a prior history of migratory superficial thrombophlebitis.

PATHOPHYSIOLOGY OF ARTERIAL EMBOLISM

The event of embolic occlusion of a major arterial channel is the first stage of a series of events which further tend to embarrass the circulation to the extremity. These factors are considered by Haimovici³ to be mechanical obstruction, vasospasm, secondary arterial thrombosis, and histiologic changes in the arterial wall.

The mechanical factor of embolism is complete arterial obstruction by the impacted clot with cessation of blood flow through the vessel. The region of ischemia resulting from such occlusion is smaller if distal vessels are obstructed than if the occlusion occurs in large mainstem arteries. When collateral pathways are present, the circulation to the tissues may remain sufficient to preserve viability unless these bypasses are secondarily obliterated by spasm or thrombosis. A friable embolus on striking the bifurcation of a vessel may shatter into many fragments which produce multiple occlusions of smaller vessels.²⁵ A similar problem may be present when multiple embolic episodes involve the same extremity.

Vasospasm involving both arterial and venous channels generally accompanies mainstem arterial occlusion. The extent and severity of spasm varies from case to case, assuming little or great importance. Myogenic spasm induced by direct trauma to the arterial wall at the site of impaction produces constriction only in the vicinity of the clot. It has been postulated that spasm of this origin prevents further distal migration of the embolus.⁷ Neurogenic or reflex vasospasm arising from local irritation of the arterial endothelium may produce extensive obstruction of the arterial and venous channels throughout the extremity.²⁶ This spasm may involve the entire collateral system, producing a complete cessation of blood flow to the distal parts. The vessels proximal to the embolus may be so markedly constricted as to produce loss of pulsations and a level of ischemia several centimeters proximal to the original site of occlusion. In rare cases the arteries of the opposite limb may be involved, producing bilateral ischemia with unilateral embolism.²⁷

Shortly after embolism occurs—perhaps as soon

as two hours—secondary thrombosis begins to develop in the arterial tree. The earliest clots form in the areas of greatest stagnation and injury, usually in the main arterial trunk immediately distal to the embolus. It is in this region that the stagnant column of blood is exposed to increased amounts of thromboplastic material liberated by the damaged arterial wall.⁷ Iselin and de Balsac²⁸ postulate that clotting is related to altered physiology of heparin-producing cells in the arterial sheath. If the collateral circulation remains unimpaired, the distally propagating thrombus will extend only to that point where stagnation is relieved by blood re-entering the occluded artery. In cases where vasospasm produces stagnation along the entire length of the vessel, thrombosis will extend distally into the terminal branches. Thrombosis similarly proceeds in the collateral vessels when the rate of blood flow within them is reduced by spasm. Thus within a few hours the entire arterial system of the extremity may be obliterated by the process of post-embolic thrombosis.

With drastic reduction of arterial blood flow, it is expected that stagnation will likewise occur in the venous circulation of the limb. Laufman²⁹ observed minute thrombi forming in the sluggish venous blood stream following arterial occlusion. From these minute thrombi develops the segmental venous thrombosis which not infrequently occurs after acute arterial occlusion.

Within several hours after embolism, inflammatory reactions begin in the arterial wall adjacent to the clot. This reaction proceeds more rapidly in adventitia than in the medial and intimal layers.³ Haimovici feels that this early arteritis is associated with a periarteritis which extends to adjacent veins producing phlebitis by direct extension. After a further lapse of time, the processes of repair or fibroplasia bind the embolus tightly to the arterial wall by fibrous tissue.

TREATMENT OF ARTERIAL EMBOLISM

As a medical and surgical emergency, peripheral arterial embolism demands prompt, adequate treatment. Within the period of a few hours, the physician must attempt a solution to the problem in order to obtain favorable results. All workers in the field agree that treatment must begin as soon as the diagnosis is made, but there is no agreement as to what comprises proper treatment of a limb affected by embolism. No particular regime of management gives consistently good results; therefore, each has its respective proponents and opponents.

The general aims of therapy are to preserve the life of the patient and to preserve the integrity of the limb. As has been mentioned, the cardiac status of patients with embolism is often precarious. It is beyond the scope of the present discussion to describe

the management of cardiac conditions. The survival of the extremity affected by acute ischemia depends upon: (1) preserving and restoring the blood supply, (2) protection from physical and chemical trauma, and (3) preventing infection.

Efforts to preserve and restore blood supply are directed toward: (1) the relief of vasospasm, (2) the prevention of thrombosis, (3) surgical removal of the obstruction, and (4) the use of mechanical means to improve circulation. Ischemic tissue has little resistance to the deleterious effects of chemical and physical agents which tend to damage the skin and underlying tissues. Therefore, it is essential that in cases of embolism the limb be protected from pressure, abrasion, harsh chemicals, heat, or cold. Infection is usually not a serious problem in the early management of arterial embolism, but precautions should be taken to prevent bacteria gaining access to the devitalized tissues.

The methods of management of peripheral arterial embolism will be discussed under the following headings:

- General procedures
- Vasodilator drugs
- Anesthetic blocks
- Anticoagulants
- Mechanical methods to improve the circulation
- Surgical procedures
- Enzymatic agents

General Procedures. In the management of peripheral embolism, certain general procedures serve as valuable adjuncts to the more specific modes of therapy. The serious nature of embolism, of course, warrants the patient being put to bed where the care of his limb may be rigidly supervised. As elevation of the part further diminishes the arterial supply, the limb should be placed in a dependent position. This may be accomplished by raising the head of the bed on shock blocks. Protective wrappings of cotton or sheet wadding protect the damaged skin from abrasions, and the danger of pressure may be obviated by placing the bed clothes over a protective cradle. Heat to the extremity is strictly contraindicated as it increases the rate of metabolic activity and, thus, hastens necrosis and gangrene. Though direct heat has been considered a means of producing dilatation of the spastic vessels, its use for this purpose is unwarranted and dangerous.

O'Leary et al.³⁰ suggest that reflex dilatation may be achieved by heating the uninvolved extremities. Their program of management includes heat applied in this manner for 30 minutes every 4 hours. Reynolds and Jirka⁷ discuss the possibility that refrigeration may be used to retard the metabolic activities of the ischemic limb, thereby reducing the nutritional requirements of the tissue. Though refrigeration may offer possibilities, it is now most generally accepted

that it is best to maintain the limb at normal room temperatures.

Vasodilator Drugs. Vasodilator drugs have long been recommended for the management of arterial embolism. Papaverine, one of the earlier agents available for the relief of vascular spasm, is still one of the more popular agents.⁴ Its advocates suggest that the drug be given in doses of half a grain every 4 hours and continued over a period of several days.^{25, 27} However, McClure and Harkins²¹ remark that papaverine is probably of little value in arterial embolism. Warren and Linton² similarly conclude that the drug is not an effective vasodilator. Massel¹ believes that papaverine hydrochloride produces little increase in the peripheral circulation after embolism and suggests that priscoline is the drug of choice.

Cooper et al.³¹ evaluated the effectiveness of tetraethylammonium chloride in relieving acute arterial insufficiency in animals from which were resected the aortic bifurcation with the common iliac and common hypogastric arteries. The untreated control group died within 24 hours, but 70 per cent of those receiving TEAC survived with a return of function to the hind limbs within 2 to 6 days. These workers, therefore, consider TEAC to be a potent agent for the relief of arterial spasm.

Though the relief of vasospasm is indicated in the treatment of embolism, there are some who feel the hypotensive response to the generalized vasodilatation induced by potent vasodilatory drugs impairs further the already inadequate blood flow through the limb. Drugs acting only on the wall of the spastic arteries would seem to be of small avail in acute ischemia, since the circulation is inadequate to carry the agent to its target organ. The ganglionic-blocking agents such as TEAC produce such a generalized response as to be potentially dangerous.

Anesthetic Blocks. Another means of attacking the arterial spasm incident to embolism is by anesthetic blocks of the sympathetic ganglion or by spinal anesthesia. The use of these methods is generally accepted as an effective means of preventing or of reversing the reflex component of post-embolic vasospasm,^{2, 4, 21, 30, 32} though the myogenic element remains unaffected. Reynolds and Jirka⁷ believe that vasospasm aids in preventing further distal migration of the embolus into segments of the artery inaccessible to surgery.

The response obtained from anesthetic blocks is dependent on several interrelated factors: (1) the duration of occlusion, (2) the severity of spasm, and (3) the extent of secondary thrombosis. Use of blocks in the early hours of occlusion before secondary changes have developed permits a more favorable response. With severe uncomplicated vasospasm, blocks may produce a dramatic return of warmth and

color to the ischemic limb. When secondary thrombosis has obstructed the collateral channels as well as the main arterial trunk, paralysis of the constrictor reflexes promotes no significant increase in blood flow. The response to anesthetic blocks is judged by observing changes in the degree of ischemia, a good response producing return of color, increased warmth, relief of pain and, sometimes, return of pulsations. At times the line of demarcation may move distally below the actual site of impaction as the proximal vasospasm is reduced.

Sympathetic blocks are performed by injecting anesthetic agent into the appropriate sympathetic ganglion. For occlusions of the upper limb, the stellate ganglion is employed; occlusions of the lower extremity indicate injection of the ipsilateral second lumbar ganglion. O'Leary³⁰ recommends the use of 20 cc. of 2 per cent procaine in producing the initial block. If so desired, a small polyethylene tube may be inserted through the needle and left indwelling for repeated blocks of 5 cc. of 2 per cent procaine every 2 hours. Massel¹ recommends the use of Bromsalizol as the agent of choice. The danger of hemorrhage into the retroperitoneal space when lumbar blocks are used in conjunction with anticoagulant therapy has been emphasized.³³

Blocks should be performed as soon as the diagnosis of embolism is made.³² If reflex vasospasm can be reversed before propagating thrombosis is extensive, the danger of subsequent thrombosis becomes reduced as stagnation is relieved by increased blood flow through collateral vessels. Whether or not surgery is contemplated as part of the definitive management, the judicious use of blocks in the early treatment of embolism permits a more favorable prognosis. If the initial results of blocks are favorable, they may be continued for several days by polyethylene catheter as prophylaxis against secondary or postoperative thrombosis.

When embolectomy is contemplated in occlusions of the lower extremity, the operator may choose to administer a spinal anesthesia to relieve arterial spasm and to provide surgical anesthesia for the operation.

Anticoagulants. Until the discovery and commercial production of heparin and, more recently, the coumarin derivatives, progressive arterial thrombosis posed one of the greatest hazards to the patient stricken with embolism. Extensive thrombosis pervading the mainstem and collateral vessels repeatedly frustrated both conservative and surgical measures to restore the circulation. Relief of vasospasm and embolectomy could offer little if secondary clotting occurred. Today, the early use of the appropriate anticoagulant, combined with other methods of management, restricts the appearance of this dangerous complication. However, once thrombosis has occurred,

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Some impulses reach the eye muscles and cause nystagmus; some reach the cerebellum and skeletal muscles and righting of the head results; others activate the emetic center to result in nausea, while still others reach the cerebrum making the person aware of his disturbed equilibrium. *Vertigo may be caused by a disease or abnormal stimuli of any of these tissues involved in the transmission of the vertigo impulse, including the cerebellum and the end organs.*

A possible explanation of Dramamine's action is that it depresses the overstimulated labyrinthine structure of the inner ear. Depression, therefore, takes place at the point at which these impulses, causing vertigo, nausea and similar disturbances, originate. Some investigators have suggested that Dramamine may have an additional sedative effect on the central nervous system.

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The site of Dramamine's action is probably in the labyrinthine structure.

*Swartout, R., III, and Gunther, K.: "Dizziness:" Vertigo and Syncope, GP 8:35 (Nov.) 1953.

the prophylactic value of heparin or dicumarol is largely lost, though it has been shown experimentally that heparin given in the early stages of clot formation may effect a dissolution of the thrombus.³⁴

Administration of anticoagulants should proceed as soon as the diagnosis of embolism is made. Heparin, by virtue of its prompt action, is the agent of choice in the initial treatment. Dicumarol, which does not produce therapeutic effects for about three days, may be given with the initial dose of heparin, but the latter must be continued until the prothrombin activity has fallen to a therapeutic level. Heparin may be administered intravenously in doses of 50 mg. every 4 hours^{7, 27} until the clotting time of the blood is about 3 times normal or 15 to 30 minutes by the Lee-White method.

The duration of effect of a single intravenous dose is reported by Murray³⁵ to be about 90 minutes, though larger doses are effective for longer periods. By using depo-heparin, a single daily injection will maintain the clotting time at therapeutic levels, the dosage being adjusted by daily laboratory checks. De Takats, in studying the effects of sulfur compounds on the clotting mechanism, found that these agents increase the heparin response.³⁶ He suggests giving 0.6 gm. of sodium tetrathionate in 1,000 cc. of fluid by the intravenous route.

If one prefers to continue treatment with dicumarol, 300 mg. of this drug may be given orally on the first day, 200 mg. on the second day, and 100 mg. daily thereafter.⁷ Heparin is discontinued on the fourth day of dicumarol administration. The dicumarol dosage is adjusted during therapy to maintain the prothrombin activity at about 20 to 35 per cent of the normal control value. Treatment with anticoagulants should be continued for one to three weeks.^{7, 30}

Mechanical Devices to Improve the Circulation. Of controversial value in the management of peripheral embolism is the use of intermittent venous occlusion and alternating positive-negative pressure (pavex) devices. Both methods are designed to produce rhythmic changes in the venous pressure and are claimed by their respective advocates to increase the circulation of the ischemic limb.

The pavex apparatus consists of a boot which fits over the extremity with an air tight seal. The pressure within the boot is alternated between negative and positive by means of an electrically driven pump. Atlas²⁷ regards pavex as being of definite value and employs it for the relief of vasospasm. Dickinson²⁶ has found it useful in establishing the collateral circulation. Linton³⁷ claims that when used with sympathetic blocks, pavex increases the collateral flow and decreases the hazard of secondary thrombosis.

In 1937 Linton²² compared the results of simple

symptomatic treatment, pressure treatment, and embolectomy. He reported that 60 per cent of limbs treated with pavex were saved, whereas only 33 per cent survived when embolectomy was performed. This latter figure was little better than the 29 per cent salvage rate for limbs treated symptomatically.

Saland¹⁸ recommends 100 hours of suction-pressure treatment. He states the contraindications to be pain, edema, or infection. The pain can often be diminished if high negative pressures are not employed. In spite of its many advocates, dissenting voices report that pavex is not effective in increasing blood flow.²¹ Injudicious use of high negative pressures may actually traumatize the devitalized tissue of the ischemic limb.

Intermittent venous occlusion also has been considered as an effective means of increasing the peripheral circulation. Collens and Wilensky³⁸ suggest using a four-minute cycle, the tourniquet being inflated to 80 mm. Hg. for 2 minutes, then released for 2 minutes. They advise continuous use for 12 hours daily. Linton et al.³⁹ reported that inflation of the cuff to 100 mm. Hg. more than doubled the blood flow in the iliac artery. Cullen et al.⁴⁰ assert that no benefit accrues from venous occlusion. Other observers report that venous occlusion diminishes the venous oxygen saturation and interpret this as evidencing a decrease in circulation.⁴¹

The status of the above described procedures in the treatment of peripheral embolism is yet undecided. These mechanical methods are perhaps of greater use in the management of chronic arterial insufficiency. If one chooses to employ these techniques, they may be used either as part of the conservative regimen or as an adjuvant to embolectomy.

Surgical Procedures. With the development of anticoagulants and methods of relieving vasospasm, surgical treatments of embolism have produced increasingly favorable results. These procedures, which may be used singly or in combinations, include embolectomy, arterectomy, sympathectomies, vascular grafts, and amputations.

The procedure of embolectomy may be performed by a variety of techniques, all of which include the removal of the embolus through an arteriotomy wound near the site of occlusion. The aim of embolectomy is to restore blood flow through the occluded vessel by removing the obstruction. Performed in the early hours of occlusion, before thrombosis has involved the distal artery and collateral channels, embolectomy may effect a normal blood flow to the limb.

De Takats²³ lists the indications for embolectomy as (1) duration of occlusion no more than 10 hours, (2) maintenance of the general circulation, (3) lack of severe peripheral arteriosclerosis, and (4) failure to improve with conservative measures. As with all



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indications for therapy, these cannot be rigidly applied.

Andrus⁴² would operate as late as 12 hours. While all authors agree that results are consistently better if surgery is performed within the first 10 hours, it is difficult to say at which point a patient should be denied embolectomy. Warren and Linton² state that surgery should not necessarily be abandoned after the "deadline"; they substantiate this view by the report of a successful femoral embolectomy performed 60 hours after occlusion. Olwin's group⁴³ reports cases operated upon as late as three months after occlusion. In such instances the collateral circulation has been adequate to provide a basal nutrition; removal of the primary obstruction reduces the degree of functional impairment due to persistent ischemia. Failure of the general circulation is not a strict contraindication to surgery, for the problem can often be controlled by digitalis and methods to relieve shock.

Though de Takats and others³⁰ recommend a trial of conservative management, other writers^{4, 32} feel that the patient should be prepared for surgery as soon as the diagnosis is made. The justification for such an attitude is indicated by the frequent observations that though gangrene may not develop, there is residual functional impairment if the main arterial channel remains obstructed.^{2, 42} This impairment may be of such severity as to make the patient a vascular cripple.

As with the previously mentioned contraindications, peripheral arteriosclerosis does not necessarily forbid embolectomy. Though arteriosclerosis is often considered a reason for failure of embolectomy,³² careful technique may give the desired results. Since thrombosis is more likely to occur in a sclerotic artery, heparin should be given preoperatively. Irrigation of the arteriotomy wound with a heparin solution prior to closure is a further precaution against postoperative thrombosis.⁴ Swinney and Coffen⁴⁴ state that even in elderly individuals the operator may usually find the arterial wall good enough for closure.

The site of occlusion also affects the decision to perform embolectomy. When the occlusion occurs in larger vessels, the technical difficulties of operation are minimal. In smaller vessels such as the radial, ulnar, tibials, and popliteal, closure of the arteriotomy wound may of itself produce obliteration of the artery. When embolism occurs in these smaller vessels, non-operative management is indicated. Due to the more extensive collateral circulation of the upper extremity, emboli to the arm rarely lead to gangrene. Therefore, a trial of conservative procedures may be more strongly considered than when occlusion occurs in the leg, though one must consider the possibility of impairment due to chronic arterial insufficiency.

Before embolectomy is performed, the patient

should be prepared with blocks and heparin. Cardiac function should be restored in so far as possible. Local anesthesia is considered the least dangerous for severely ill patients,^{2, 21} though spinal anesthesia is probably safe for procedures on the lower extremity.

Following routine preparation of the operative field, the tissues overlying the vessel are incised and the artery is opened by a longitudinal arteriotomy wound. Removal of the embolus and the distal thrombus is attempted by use of forceps, probes, and suction. Lavage of the vessel with a citrated solution may aid in the removal of small fragments of thrombus. Massive pulsating hemorrhage from the proximal artery and adequate reflux flow from the distal segment are the criteria for adequate removal of the clot and should be obtained before closure is made. Irrigation of the arterial lumen with a heparin solution aids in the prevention of postoperative thrombosis.⁴ For cases in which extensive thrombosis has developed prior to surgery, Keeley and Rooney⁴⁵ describe the technique of retrograde milking as an adjunct to embolectomy. The thrombus is milked from the distal vessels toward the arteriotomy by wrapping the leg firmly from the toes upward with a wide para rubber bandage.

Embolectomy combined with sympathetic blocks, heparin, protection of the limb, and, possibly, vasodilatory drugs offers at present the most favorable prognosis for limbs with early embolism. Table V shows the limb salvage rates reported by several authors.

TABLE V
COMPARATIVE LIMB SALVAGE RATES FOR EMBOLECTOMY AND CONSERVATIVE METHODS

Author	Embolectomy	Conservative	Comments
Linton (1937)	33.3 %	60.0%	no blocks or anticoagulants
Warren and Linton (1948)	85.7 %	65.8%	
Reynolds and Jirka (1944)	81.25%		
Veal (1951)	81.2 %		

Arterectomy—the excision of the arterial segment occluded by embolism—may at times be used when embolectomy is contraindicated. McClure and Harkins²¹ list the indications for arterectomy as (1) poor condition of the patient, (2) damage of the arterial wall, or (3) post-embolectomy thrombosis. The rationale of arterectomy is to bring about a cessation of the arterial spasm blocking the collateral vessels by resecting the site of endothelial irritation.²⁸ Since removal of the main arterial trunk places the burden of circulation upon the collateral vessels, the integrity of these channels must be determined before arterectomy is contemplated. De Takats²³ suggests that the procedure is contraindicated if sympathetic blocks preoperatively fail to improve the collateral flow. Leriche, Fontain, and Dupertuis⁴⁶ remark that several

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Although the nutrient needs for optimal health in the aged are not known to differ significantly from those in younger adults,¹ it has been shown that the daily protein requirements in elderly patients vary from person to person. Ascertained values range from below to above allowances recommended for persons in earlier years of adulthood.²

According to criteria such as "physical activity, gastrointestinal structure and function, pathologic disturbances, and chemical balances," it is suggested that an optimal diet for the elderly patient should provide at least 20 per cent of its calories in the form of protein.³

For several reasons this high intake of protein appears desirable. Decreased activity in the aged tends to induce loss of tissue protein. Preservation of protein enzymes and of endocrinal harmony necessary for supporting anabolic processes requires adequate protein nutrition. Also, the aged person usually is able to handle the end products of protein metabolism satisfactorily.

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1. Sebrell, W. H. Jr., and Hundley, J. M.: Malnutrition, in Stieglitz, E. J.: *Geriatric Medicine, Medical Care of Later Maturity*, ed. 3, Philadelphia, J. B. Lippincott Company, 1954, chap. 13.
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3. Freeman, J. T.: Clinical Correlations in Geriatric Nutrition, *J. Clin. Nutrition* 1:446 (Sept.-Oct.) 1953.

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inches of the occluded vessel must be resected to eliminate the reflex spasm. The first distal collateral, however, should be left intact.²¹

Vascular grafts: Though arterectomy may be useful in avoiding the immediate danger of gangrene, extremities so treated are susceptible to chronic arterial insufficiency. The function impairment related to this persistent ischemia may be avoided or alleviated if the continuity of the vessel is restored by vascular grafts.^{47, 48} Blakemore, Lord, and Steffko⁴⁹ describe a non-suture technique of blood vessel anastomosis which is applicable to these cases. A vein segment is pulled through a vitallium tube and the ends are everted over the tube by 8 to 9 mm. The arterial ends are then slipped over the prosthesis and tied in place by ligatures.

Sympathectomies: The performance of lumbar sympathectomy upon a critically ill patient is seldom warranted. So prolonged and radical an operation should hardly be considered as part of the emergency management of embolism. It would seem more reasonable to reserve this procedure for the relief of subsequent arterial insufficiency.

Periarterial sympathectomy, on the other hand, is an innocuous procedure which may be performed as an adjunct to embolectomy. It serves the double purpose of removing the damaged adventitia and of preventing the conduction of sympathetic impulses to the vessel.²¹ The effectiveness of this procedure has not been carefully evaluated.

Amputation will be the final treatment for a considerable number of limbs affected by embolism. In Haimovici's series,³ 28 per cent of cases developed gangrene. Warren and Linton² reported that 30 per cent of limbs were lost. The time for amputation is when it is obvious that the limb cannot survive. However, even in serious cases where gangrene appears inevitable, a trial of surgical and medical efforts to save the limb should be attempted before amputation is considered. Removal of the limb is indicated when gangrene has persisted for 48 hours.²¹

Enzymatic Agents. In recent years the enzymatic digestion of intravascular thrombi has received the attention of several investigators. Though results of treatment in experimental animals have been observed, evaluation of these agents in the management of human embolism is yet inadequate. Innerfield's group,⁵⁰ working with experimental animals, evaluated the anticoagulant, fibrinolytic, and thrombolytic effects of intravenous trypsin. They reported prolonged clotting time and diminished titers of the protein constituents of the clotting mechanism. Higher dosages of trypsin would effect dissolution of thrombi. This same group of investigators,⁵¹ working with humans, found trypsin to be a safe and effective means of destroying the clotting mechanism. Unto-

ward results were not seen with careful calculation of dosage.

The suggested method of preparation is to dissolve 10 mg. of trypsin in 3 cc. normal saline and then add to 100 cc. of normal saline containing 1 cc. of Histadyl. The solution is given intravenously at the rate of 30 drops per minute. The infusion may be repeated twice daily. The prepared solution must be given promptly as 40 to 50 per cent of its proteolytic activity is lost within 3 to 4 hours.

Sherry et al.⁵² studied the effects of trypsin, chymotrypsin, and plasmin activator on one-day-old femoral and popliteal thrombi in dogs. Their studies reveal no clot dissolution by trypsin, but chymotrypsin in doses of 12 to 30 mg./Kg. accomplished complete lysis of the clots in half the animals studied. The most striking effects were noted in a group of animals injected with a mixture of streptokinase and a partially purified human plasma fraction III factor. Extensive lytic effects on the thrombi were noted in the majority of animals in this latter group. Further clinical investigation is necessary before the enzymatic agents will become a part of the routine management of peripheral arterial embolism.

PROGNOSIS

Prognosis of the Limb. The prognosis of a limb affected by arterial embolism is determined largely by the degree and duration of ischemia. The several variables which influence ischemia have been explained to some extent, but many aspects of the problem are not yet elucidated. The ischemia—hence the survival of the limb—depends upon the site of occlusion, the severity and duration of spasm, the extent of secondary thrombosis, the presence of prior vascular pathology, the presence of collateral vessels, the general circulatory reserve, and the promptness of treatment. Haimovici³ notes that the age of the patient is not an important factor.

Though one can describe the extent of vasospasm and thrombosis as influencing the prognosis, it is more difficult to explain the case to case variation of these factors. Why does one patient with a femoral embolus develop a line of demarcation near the groin, while another with less extensive vasospasm will form a level of ischemia near the knee? Why does one patient within 10 hours have extensive obliteration of his vessels by secondary thrombosis, though another, even without treatment, develops minimal thrombosis? Haimovici³ has recognized this case to case variation and describes the following clinical forms of embolism:

1. Embolism with marked ischemia and early death—11.3 per cent of cases
2. Embolism with marked initial ischemia which partially subsides, resulting in chronic post-embolic ischemia—16.5 per cent of cases



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3. Embolism followed by gangrene—28 per cent of cases

4. Embolism with marked initial ischemia which subsequently subsides completely, resulting in an ischemic embolism—29.5 per cent of cases

5. Embolism with undetermined degree of recovery due to inadequate follow up—9.6 per cent of cases

6. Silent embolism—5.7 per cent of cases.

With such marked variation in the natural course of the disease, the difficulties in assessing the various therapeutic methods are immediately apparent.

In discussing prognosis of the limb it is noted that there are three groups or classifications of results of embolism: (1) limbs with no residual ischemia, (2) limbs with some degree of residual ischemia, and (3) limbs developing gangrene and requiring amputation. Most authors, in assessing their results, consider only whether the limb was saved, making no analysis of the frequency of residual ischemia. With adequate early treatment, 60 to 85 per cent of limbs may be saved.^{2, 32} Reynolds and Jirka⁷ state that they obtained functional limbs in 81.25 per cent of cases. According to Haimovici,³ 16.5 per cent of cases will develop chronic post-embolic ischemia manifested by Volkmann's contractures, intermittent claudication, ischemic neuritis, persistent color changes, and small patches of gangrene. Griffiths⁵³ reported that 3 of 20 cases developed typical Volkmann's ischemic contractures despite apparently successful restoration of the circulation.

Prognosis of the Patient. In cases of peripheral arterial embolism, the ultimate prognosis of the patient is that of the causative disease.⁵⁴ Haimovici³ reported his case mortality rate to be 47.6 per cent in untreated and conservatively treated cases and 51.7 per cent in those treated surgically. Pratt⁴ remarks that the survival charts of embolism closely resemble those for well-treated carcinoma of the breast. Whether embolism occurs in the upper or lower extremity apparently does not affect the mortality rate.⁵⁵ The hospital mortality reported by other authors is 32 to 38.7 per cent.^{2, 42} Causes of death are usually on the basis of the primary heart disease or due to visceral emboli. The concurrent venous thrombosis of peripheral embolism not infrequently complicates the picture by producing pulmonary embolism.

PROPHYLAXIS

With modern therapeutics placing increased emphasis on preventive medicine, the application of this philosophy to arterial embolism should be considered. A perspective of the problem may be gained through the statistics of Pratt,⁴ who reports that embolism occurs in 25 per cent of patients dying of heart disease. The problem arises in about 10 per cent of patients with rheumatic heart disease, and about 60

per cent of these will have multiple episodes.⁹ The incidence of thrombo-embolic episodes following myocardial infarction ranges from about 15 to 25 per cent.^{14, 15, 16}

The methods of attack upon the problem are both medical and surgical. Long term anticoagulant therapy has been employed by Cosgriff⁹ in recurrent embolism of cardiac origin. In a series of patients who had had 103 embolic episodes during 275 "patient-months," long term therapy with dicumarol reduced the frequency of embolism in these same patients to 13 episodes during 625 "patient-treatment months." Foley and Wright⁵⁶ reported that no thromboembolic episodes occurred in their patients while the prothrombin time was maintained at therapeutic levels.

The frequency with which auricular fibrillation is associated with embolism has led to efforts to convert this arrhythmia as a prophylactic measure. Harvey and Levine¹² report that 90 per cent of persistent fibrillators develop auricular thrombosis and, thus, are potential embolizers. The conversion of fibrillation to a regular rhythm is attempted by administering appropriate doses of quinidine or pronestyl. Though some authors feel that conversion itself may dislodge thrombotic fragments into the circulation,⁵⁷ Lackay and Housel⁵⁸ regard this danger as no greater than if fibrillation should continue.

Deserving only brief remark is the application of surgery to the prevention of embolism. The procedure of left auricular appendectomy has not met with great acclaim; it would seem to be an unreasonably dangerous procedure in patients whose chances for survival are poor. Nor could the procedure logically be effective, for many cases do not have the thrombotic process restricted to the appendage. Leonard and Cogan,⁵⁹ reporting 8 cases, noted that 3 re-embolized in a matter of days. They remark that 25 per cent of embolic sources are restricted to the appendage of the left auricle; it is impossible to determine this 25 per cent of patients pre-operatively. Jordan et al.⁶⁰ analyzing 57 cases of mitral stenosis with cardiac thrombi, found that about half of the thrombi on the left side were not restricted to the appendage. When the source of potential emboli is an aneurysm of the aorta or a major artery, the surgeon may resect the aneurysm and substitute a vascular graft.⁴⁸

CASE REPORT

Patient C. S., a 53-year-old colored man, was admitted on the evening of May 5, 1953, to the Kansas City Veterans Administration Hospital with a complaint of severe pain in the right leg. He noted nothing unusual referable to the extremity until about 7 days prior to admission when, on arising one morning, he noticed mild swelling, subjective coldness, and slight aching in the right foot. He spent the next several days quietly at home and observed that the

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1. O'Regan, C., and Schwarzer, S.: *J. Pediat.* 44:172 (Feb.) 1954.

2. Waddington, W. S.; Bergy, G. C.; Nielsen, R. L., and Kirby, W. M. M.: *Am. J. M. Sc.* 228:164 (Aug.) 1954.



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aching and swelling disappeared though the coldness persisted.

No further difficulty was experienced with the leg until about 3:00 p.m. on the afternoon of admission. The patient had been resting quietly in a chair when the phone rang; as he arose to answer, the right knee seemed to give way beneath him and the leg was very weak. He returned to his chair and shortly noticed a mild aching which became progressively worse until it was severe. He called his physician who gave an injection for pain. He was brought to the hospital and became comatose during the trip.

The patient later stated that he had not felt well since 1936 and that during the past 10 years he had suffered recurrent episodes of vertigo. In 1949 he consulted a physician for symptoms of frequent severe temporal headaches, vertigo, diplopia, faintness, and dyspnea; he was given digitalis. In 1950 he entered a hospital because of similar symptoms; he was told at this time that he had high blood pressure and an enlarged heart. In 1951 he was admitted to another hospital complaining of severe pain in the left leg. A diagnosis of femoral embolism was made, and the limb was amputated in the proximal third of the thigh.

The patient had taken digitalis erratically since 1949, but because of financial problems he had taken none in the past 6 months. During this period he had developed progressively severe symptoms of cardiac decompensation—exertional dyspnea, orthopnea, and paroxysmal nocturnal dyspnea. All of these symptoms had become dramatically worse during the past week.

Past History: The patient had measles, mumps, and pertussis during childhood without complications. He had typhoid fever in 1909 and gonorrhea in 1920. He underwent an appendectomy in 1950 and amputation of his left leg in 1951. He was employed as a jailer until May, 1951, when he was forced to stop work because of his cardio-vascular status.

Review of Systems: The patient's general health had been poor since 1936. During the past 6 to 7 years he had had frequent headaches, vertigo, diplopia, and faintness. During recent years he had suffered frequent respiratory infections and a chronic cough productive of small amounts of blood tinged sputum. His appetite had been poor since 1952, and he experienced frequent nausea but no vomiting. His stools were occasionally black and tarry, but more often were chalky white. He noted nocturia about 4 times nightly.

Physical Examination: Examination revealed a well developed, well nourished colored man who was comatose and in acute respiratory distress. The head and neck revealed no scars; the thyroid was smooth and not enlarged; the trachea was in the mid-line.

The pupils were found to be small and equal, and they reacted to light; the sclera and conjunctiva were normal. Funduscopic examination revealed gr. iii hypertensive retinopathy. The tympanic membranes and auditory canals were normal. The nasal cavities revealed no ulceration, septal deviation, or obstruction. Oral hygiene was poor. The breath was foul with a faint, sweetish odor superimposed. The tongue was red and moist.

Movements and configuration of the chest were bilaterally symmetrical. Respirations were irregular (Cheyne-Stokes) with periods of apnea lasting up to one minute. Tactile fremitus was normal, and there was no dullness to percussion. Moist rales were heard bilaterally in the lung bases. The left border of the heart was percussed in the anterior axillary line. The heart sounds were feeble, the rate 120; there was a fetal rhythm. The second pulmonic sound was accentuated.

The abdomen revealed no areas of rigidity, but shifting dullness was found in the flanks and a fluid wave was elicited. A blunted liver edge was palpated 6 centimeters below the right costal margin, and there was tenderness to fist percussion over the right lower thorax. The left leg had been amputated at the proximal third of the thigh. On the right the femoral, popliteal, dorsalis pedis, and posterior tibial pulses were absent. The extremity was cold, the nail beds blanched, and a line of ischemia was found immediately distal to the inguinal ligament. There was marked muscular weakness and a loss of deep reflexes in the limb. A sensory examination was impossible because of the patient's inability to respond.

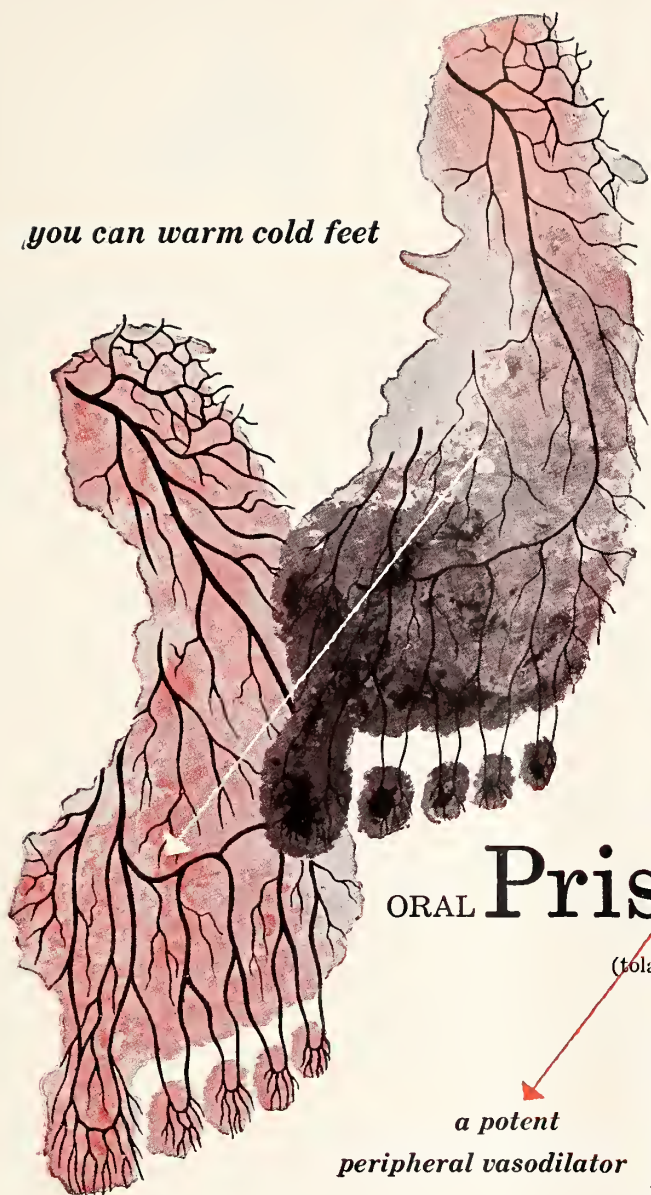
The initial impression was:

1. Arterial embolism of the right common femoral artery
2. Hypertensive cardiovascular disease with
 - a. cardiac hypertrophy
 - b. cardiac decompensation
 - c. cardiac arrhythmia—fetal rhythm
3. Chronic passive congestion of the lungs and abdominal viscera.

The admission urinalysis report included specific gravity 1.017; albumin 4 plus; sugar negative; microscopic of 12 white blood count, six to eight granular casts, and one to two hyaline casts per high power field. The red blood count was 5,200,000; hemoglobin 14.5 gm./100 cc., white blood count 8,850 with a normal differential. Further blood studies revealed the following: nonprotein nitrogen 49.5 mg./100 cc., blood glucose 250 mg./100 cc.

Shortly after admission the patient was started on oxygen continuously by nasal catheter; rapid digitalization was carried out with two 0.6 mg. doses of digitoxin intravenously; 10 cc. of aminophylline were given slowly by vein. A spinal anesthetic was ad-

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Under this management the patient rapidly regained consciousness and became well oriented. The Cheyne-Stokes type of respiration ceased, and the rhythm of the heart became normal with a rate of 100 to 120. The femoral pulsations returned, and the level of ischemia receded from the inguinal region to a point in the distal third of the thigh.

When it was felt that the patient's cardiac condition was adequately controlled, he was taken to the operating room where a common femoral embolectomy was performed under continuous spinal anesthesia. The clot was removed by means of a glass suction tip approximately 10 hours after the initial occlusion. A small amount of distal thrombus was obtained. A free flow of blood was obtained both from above and from below the arteriotomy wound. The artery was closed and the vessel irrigated with a heparin solution.

Immediately after the operation the popliteal pulse was faintly palpable, but the dorsalis pedis and posterior tibial arteries could not be felt. The line of ischemia had now receded to the knee. Postoperatively the patient was continued on depo-heparin, and the clotting time was checked daily.

On the second hospital day the calf of the right leg was markedly swollen and tender. The popliteal and femoral pulses were strong, but the ankle pulses were still absent. The line of ischemia was now in the mid-calf region. Cardiac decompensation manifested by Cheyne-Stokes breathing, fetal rhythm, and increasing pulmonary edema and ascites again appeared, but was quickly controlled with digitalis.

On the fourth hospital day the clotting time was more than one hour, and on the fifth day the patient began to bleed from the operative wound. On the sixth day the patient was returned to surgery where the blood clot was evacuated from the wound and the opening closed secondarily. By the seventh day the congestive failure was well controlled; the ankle pulses were yet absent, but there was good color return to the nail beds; a sensory deficit persisted in the lower part of the leg. The patient continued to improve and was discharged to the old soldiers' home approximately two months after the embolic accident. The final diagnosis was femoral embolism with residual chronic ischemia.

COMMENT AND SUMMARY

Peripheral arterial embolism usually appears as a serious complication of grave cardiac disease. Rheumatic heart disease and myocardial infarction are the most frequent causes of embolism. Emboli may lodge in any artery of the body, but 60 per cent or more occlude vessels of the extremities, the incidence being three to four times higher in the legs. Acute occlu-



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sion initiates a series of events which contribute further to the ischemia, namely arterial spasm, secondary thrombosis, arteritis, and thrombophlebitis.

The treatment of embolism includes protection of the limb, vasodilator drugs, anticoagulants, mechanical pressure devices, surgical procedures, and enzymatic agents.

The prognosis of the limb affected by embolism depends upon the extent and duration of ischemia. Approximately 80 per cent of limbs may be saved with early adequate treatment, though some of the surviving limbs will develop chronic ischemia. Many of the patients die during the hospital stay, the case mortality rate being in the range of 30 to 50 per cent.

Certain prophylactic procedures have been attempted to prevent recurrent embolism. These include anticoagulant therapy, conversion of auricular fibrillation, left auricular appendectomy, and resection of arterial aneurysms.

A case is presented which demonstrates the following characteristics of the syndrome of acute arterial embolic occlusion:

1. the precarious condition of the patient
2. the recent change in cardiac status
3. the tendency for the occurrence of multiple embolic episodes—two femoral emboli
4. the lack of initial severe pain
5. the effect of vasospasm and the relief of spasm by spinal anesthesia
6. the safety of spinal anesthesia when the cardiac reserve is poor
7. the favorable results of early application of combined medical and surgical measures
8. the development of chronic arterial insufficiency.

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THE KANSAS PRESS LOOKS AT MEDICINE

Editor's Note. In this section the JOURNAL reproduces editorials relating to medicine which have appeared in the lay press. An effort is made to include both favorable and unfavorable comments, and the Editorial Board in no instance assumes responsibility for the opinions expressed.

FEDERAL AID

This nation's 80 medical schools are graduating 6,700 new physicians a year. That is far too few to replace the doctors dying and retiring each year, and to meet the nation's growing medical demands.

State taxation and private donations have been stretched about as far as they will go to improve the situation by building bigger and better medical schools. They won't stretch far enough.

A solution which more and more medical educators are eyeing is federal support. The schools and their supporters are reluctant to accept such a solution, and rightly so. We don't want congressional interference in the operation of our medical schools. We don't want political medicine.

But we have this ridiculous paradox where federal funds are used for the cure and prevention of hog cholera in Iowa and the control of locusts in Trans-Jordan, but we're afraid to use those same funds to improve medicine in this country.

It can be done—federal funds can be used safely for the support of medical schools. Legislation could be drawn which specifies clearly that the federal government has no concern with the hiring or firing of faculty, or the establishment of curriculum. Any school would be eligible for aid which meets the standards of the American Medical Association and those standards would be established by the Association with no interference by the federal government.

Aid could take two forms. Outright grants could be made to schools for construction and equipping of classrooms, laboratories and hospitals. Federal funds could be used for scholarships for competent students under an arrangement similar to the GI bill

for education of veterans. The medical school's faculty, and not the government, would determine the student's eligibility for the aid.

It is wise to be skeptical of federal aid and alert to its dangers. But fear shouldn't be permitted to block the wisest use of the nation's resources in meeting the nation's needs.—*Chanute Tribune*, November 27, 1954.

NAPS INSTEAD OF PILLS

Chosen as the "Family Doctor of 1954," Dr. Karl B. Pace of Greenville, N. C., shows his appreciation of the honor by giving much-needed advice to this generation suffering from nerve tension, dignified by such alarming phrases as psychosomatic and emotional troubles, affecting at least 60 per cent of the population. He has set a sort of free clinic for those who are finding the going a bit tough in an age of stress and strain.

His formula for happy and healthy living is simple enough. Live today, let tomorrow take care of itself. Don't try to get rich. Try to like everyone you meet, spend more time at home, and take a nap in the middle of the day as a means of relaxation. The family doctor today must be a counselor rather than a physician. Give advice instead of pills.

Sound advice, every word of it. But the average doctor will tell you he wouldn't get very far, or be too popular, by prescribing naps instead of medicine. As a people we are looking for something to take the place of common sense. We are so busy trying to keep up with the procession we do not have time for midday naps. How much better off we would be if we followed the advice of the good doctor. But we won't because it is free, and there are no prescriptions to be filled.—*Wichita Eagle*, December 1, 1954.

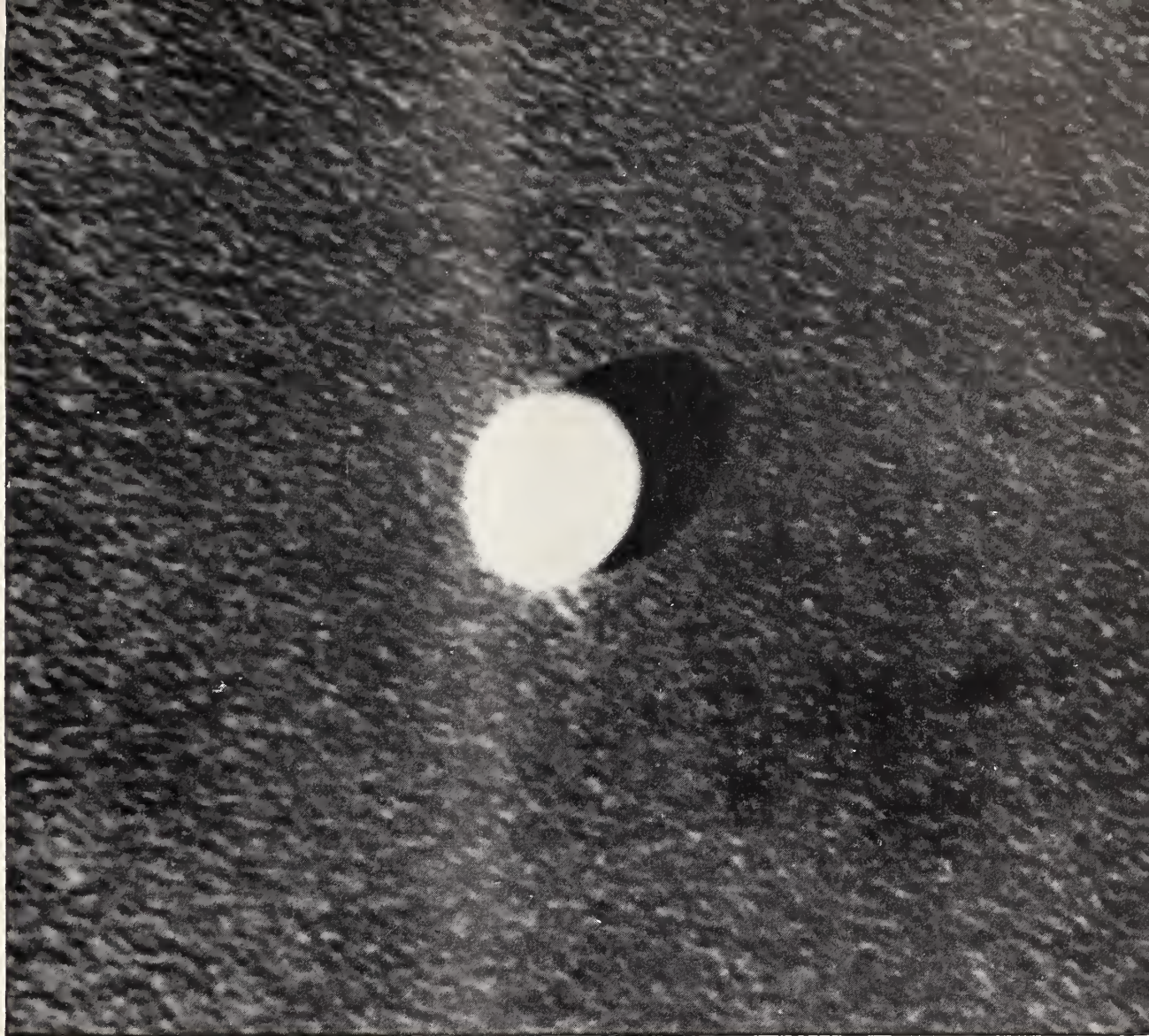
The revised catalog of medical and health films now available from the A.M.A.'s Committee on Medical Motion Pictures may be obtained on request from the committee. The booklet gives brief descriptions of more than 100 films.

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RECENT KU graduate, licensed Kansas, will be released from service about May 1, 1955. Intends starting residency July. Seeking locum tenens for months of May and June. Write the Journal 1-55.



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ANNOUNCEMENTS

Announcement is made of a heart conference to be presented February 10 and 11 by the University of Kansas School of Medicine in co-operation with The Kansas Medical Society, the Kansas State Board of Health, the Kansas Heart Association, and the Kansas City (Missouri) Heart Association. There will be no registration fee.

The 7th annual meeting of the American Academy of Forensic Sciences will be held in the Biltmore Hotel, Los Angeles, February 17, 18, 19. The Law Department of the A.M.A. has urged that the profession take an increasing interest in medico-legal problems. Further information may be obtained from Dr. Frederick D. Newbarr, 109 Hall of Justice, Los Angeles 12, California.

The 9th annual M. D. Anderson Symposium on Fundamental Cancer Research will be held March 10, 11, and 12 at the University of Texas M. D. Anderson Hospital and Tumor Institute in the Texas Medical Center, Houston. The first day will be devoted to a review of current research projects at the hospital, the second day to histochemistry, and the third day to presentations reflecting current cancer research in the Southwest.

The Ciba Foundation, London, a body for the promotion of international cooperation in medical and chemical research, announces that it will present five awards of 300 pounds each to contestants doing experimental research into problems of aging. Entries, to be submitted no later than February 28, will be judged by an independent international panel of scientists. Director of the foundation is G. E. W. Wolstenholme, 41, Portland Place, London, W.1, England.

The Harvard University School of Public Health announces that candidates for scholarships in public health must present applications by March 1, 1955. Awards range from part tuition to tuition plus a stipend, according to the qualifications and financial needs of applicants. Complete information may be secured from the secretary, Harvard School of Public Health, 55 Shattuck Street, Boston 15, Massachusetts.

The 18th annual meeting of the New Orleans Graduate Medical Assembly will be held March 7-10, 1955, with headquarters at the New Orleans Municipal Auditorium. The post-clinical tour to Europe will follow immediately after the meeting. Complete information may be secured from Dr. Maurice E. St. Martin, 1430 Tulane Avenue, New Orleans 12, Louisiana.

The Council on Postgraduate Medical Education of the American College of Chest Physicians, in co-operation with the staffs and faculties of the hospitals and medical schools of Philadelphia, will sponsor the 8th annual Postgraduate Course on Diseases of the Chest at the Bellevue-Stratford Hotel, Philadelphia, March 7-11. Tuition is \$75. Information may be secured from the College, 112 East Chestnut Street, Chicago 11, Illinois.

A five-day postgraduate course on "The Clinical Management of Emotional Problems in Children" will be presented at the University of Colorado Medical Center, April 4-9. Registration will be limited. The guest lecturer will be Dr. Reginald S. Lourie, director of the Psychiatric Clinic of Children's Hospital, Washington, D.C. Program and information may be obtained from the Office of Postgraduate Medical Education, 4200 East Ninth Avenue, Denver 20, Colorado.

The Council on Undergraduate Medical Education of the American College of Chest Physicians offers three cash awards for the best contributions prepared by undergraduate medical students on any phase of the diagnosis and treatment of heart or lung disease. Awards will be \$250, \$100, and \$50. Closing date of the contest is April 10. The address of the College is 112 East Chestnut Street, Chicago 11, Illinois.

The Mayo Clinic and Mayo Foundation announce a four-day program, April 19-22, of lectures and discussions on problems in the general fields of medicine and surgery. Attendance will be limited, so physicians wishing to attend should communicate with Dr. N. W. Barker, Mayo Clinic, Rochester, Minnesota, before March 1. No registration fee will be charged.

The U. S. Civil Service Commission has announced that applications are now being accepted for medical officer for trainee positions in St. Elizabeth's Hospital, Washington, D.C. Rotating interns will receive

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\$2,800 a year, and residents-in-training in psychiatry and in neurology will receive \$3,400 to \$4,200 a year. Appointments will be open July 1, but applications will be accepted at any time. Information may be secured from post offices or from the U. S. Civil Service Commission, Washington 25, D.C.

BOOK REVIEWS

Clinical Aspects of the Autonomic Nervous System. By L. A. Gillian. Published by Little, Brown and Company, Boston. 316 pages. Price \$6.50.

Fundamentally an anatomy text, this small volume presents a detailed account of the autonomic nervous system in a fashion pleasing and helpful to the clinician. It is up to date with the most recent contributions in neuroanatomical and neurophysiological research, and it is modern in its explanation of many psychosomatic symptoms on the basis of autonomic dysfunction.

Its first half is a discussion of the anatomy of the autonomic nervous system as a whole, and its second half is organized into a presentation of the innervation of the individual organs and systems, with many comments of clinical significance.

The figures of this complicated subject are reasonably clear, and some are conveniently duplicated several times in the text. Chapters are outlined at their beginning, and section headings make for ready reference. An excellent bibliography is included.

The book as a whole is well done and will be of value to both anatomist and clinician.—W.P.W.

Total registration at the A.M.A. meeting in Miami last month was 7,707. Of this number, 3,253 were physicians.

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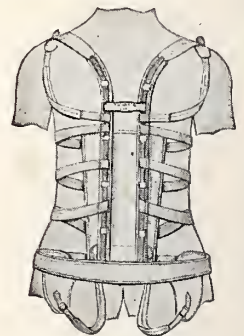
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*Kaufman, R. H.; Mendelowitz, S. M., & Ratzan, W. J.: *Am. J. Obst. & Gynec.* 65:269, 1953.

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Tuberculosis Eradication in Kansas

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Minneapolis, Minnesota

On a number of occasions over the years I have been truly honored by invitations to meet with the Kansas Tuberculosis and Health Association. The first invitation was signed by that great pioneer in tuberculosis control, Dr. C. H. Lerrigo. Another came from Dr. Seth Cox, famous for tuberculin testing here and in the state of Washington. The present one came from Mr. W. W. Wilmore, with his keen insight and understanding of the procedures necessary to eradicate tuberculosis.

In Kansas, as in every other place, the tuberculosis situation determined the work to be done in each era of the evolution of the program. When this association was organized in 1908, many of the state's citizens were dying and many more were falling ill from tuberculosis annually. The disease was known to be contagious. If the great loss in health and life was to be checked, the contagious cases had to be segregated; hence you provided a sanatorium at Norton to which the first patient was admitted on February 8, 1915. The citizenry had to be informed; therefore, this organization waged an educational campaign which was enlarged and intensified as the years and decades passed. You promptly adopted and promoted every method of case finding that was of proved value. Professional workers throughout the state employed the best treatment methods known from decade to decade. Nowhere has treatment been better than at the Kansas State Sanatorium and at the University of Kansas. The only sound preventive measure, namely, prevention of spread of tubercle

bacilli to the uninfected, has been practiced since the beginning of this organization.

Your accomplishments have been phenomenal. In 1908, 943 deaths from tuberculosis were reported. The peak was reached in 1913 when 1,088 died. Thereafter, the mortality decreased, first going slightly below 500 in 1937, below 200 in 1950, and reaching the all time low of 100 in 1953. Of the 100 who died last year, 80 were 40 years or older and 52 were 60 or beyond. Under the age of 25 years only six died, and death took no life of a teen-age girl or boy.

Thirty years before (1923), of the 764 who died 199 were under the age of 25, and 66 were in the teens. That year the mortality rate in Kansas was 41.8 per 100,000. Last year it was 5.1 and ranked among the lowest of the states.

I have not been impressed with the thought that we should cease to mention mortality. The reduced number of deaths in Kansas shows that the original objective is being attained. This alone much more than justifies past expenditure of time, effort, and funds. The public should have this accounting of the stewardship of past and present workers. On the other hand, people are still dying from tuberculosis. There are villages in this state whose populations do not exceed 100. If a tornado were to destroy all life in one of them, such consternation would prevail as to be headlined in the newspapers of this country. This is exactly what tuberculosis did in Kansas in 1953. This should not be ignored.

Along with the decline in mortality there has been a marked decrease in morbidity. The highest number

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of cases reported in any one year was 2,620 in 1911. In 1921 to 1927, inclusive, the number was above 2,000 each year. After 1933 the number of reported cases did not reach 1,000 except in 1948 with 1,160. The smallest number since 1907 was 390 in 1953. Since 1947 the mortality rate has decreased more precipitously than the morbidity rate. This is probably due in large part to antimicrobial drugs which have at least postponed death in many cases, and also to intensive case finding work which has brought to light a sizable number of cases in the pre-symptom stage. However true the oft repeated statement that the number of cases of tuberculosis has increased or has not decreased satisfactorily, this does not apply to Kansas. In this respect also, the citizens of this state can take just pride in the accomplishment, and they have every right to know exactly how much morbidity and mortality have decreased.

In some places fear has been expressed that if the public is informed of the present low mortality and morbidity rates such a sense of security will develop that no need will be seen to continue to support tuberculosis work. It would seem that quite the contrary should be true. Accomplishments to date should justify the utmost confidence of the total population, which will insure support if they are appraised of the magnitude of the problem which lies ahead. In the first place, people have not stopped dying from tuberculosis, and last year the morbidity was nearly four times the mortality. A large amount of time, effort, and money will be necessary before the last death occurs and the last person has fallen ill. When this time arrives, there will still be a large tuberculosis problem in Kansas.

No one knows the magnitude of the present tuberculosis problem in this state. It is limited to those who are harboring tubercle bacilli. Very few of these people are sick tonight, and most of them appear entirely normal. If x-ray film inspection were made of each of the 1,965,000 citizens of Kansas, relatively few of those now harboring tubercle bacilli would be identified. However, all such persons have lesions, but most of them are not now large enough or do not have the consistency to cast visible shadows on x-ray films. Some lesions are located in the 25 per cent of the lungs not seen on the usual x-ray film, and others are located extrathoracically. Post mortem examinations by thoracic surgeons and pathologists have revealed that far more gross tuberculosis is missed than found by x-ray film inspection of the chest. Therefore, the mass x-ray survey is of little help in determining the true tuberculosis situation, that is, in finding those now harboring tubercle bacilli.

About 1937, Hammond believed that if an x-ray film could be made of the chest of everyone, most of

those with cancer of the bronchi and lungs would be found in time to be treated successfully. Unfortunately, mass x-ray surveys have been disappointing in locating unmetastasized malignancies. Dr. Katharine R. Boucot recently reported on 142,156 persons from two photofluorographic survey units in Philadelphia between January 1947 and May 1953, and 37 per 100,000 were found to have cancer.

Among 100 consecutive cases of cancer she observed, 29 had had previous photofluorograms which were available for comparison. In 16 of the 29, lesions were overlooked on the earlier films, and in the remaining 13 no evidence of the disease could be seen at the time the previous films were made.

Twenty-five presented shadow-casting lesions which were not at first thought by the readers to represent cancer. Among the 100 cases, nearly one-half died from cancer within a year. Exploratory operations were done on 52, but only 30 were resectable, of whom only 5 (9 per cent) were alive at the end of three years after the first abnormal photofluorogram was found. Boucot stated that the chances of survey-detected cancer patients living for five years is about 10 per cent. She recommended that the search continue for new, more effective case-finding technics.

Gowen, reporting on 154,000 persons with survey photofluorograms at Springfield, Illinois, stated that only about 5 per 100,000 were found to have cardiac conditions requiring medical treatment or counseling. He pointed out that in such surveys attention should be paid to how many previously unknown cases are found which require medical attention and not merely how many cases of cardiac abnormality are found. In other places similar results have been observed; therefore, the by-products, namely, detection of cancer and heart conditions, which many hoped would return a good yield in mass tuberculosis x-ray surveys have for the most part been discouraging.

Considerable criticism has been leveled at mass x-ray surveys on the ground that so many reports included little more than the number of participants. In others, misleading reports have appeared. In some surveys, newspaper articles gave the impression that several thousand cases of tuberculosis had been found when in reality all abnormalities had been included, such as calcific deposit and diaphragmatic adhesions. Final examinations revealed that relatively few persons with tuberculosis requiring treatment had been brought to light, and many of them were already known.

Apparently it was necessary to go through these various stages and unfortunate circumstances over considerable time to evaluate mass x-ray surveys. We have profited greatly by this experience, and a gen-

eral impression now prevails to the effect that with few exceptions x-ray surveys should be limited to certain segments of the population such as elderly people, inmates of prisons, and institutions for the mentally ill.

The only method now available by which the magnitude of the present tuberculosis problem can be determined consists of testing everyone with tuberculin.

Inasmuch as the tuberculin test has such a dominant role to play as our sheet anchor in the eradication of tuberculosis, some of its values should be reviewed:

1. By the tuberculin test the presence of *tuberculosis is detected earlier* than by any other procedure. Indeed, within 6 to 8 weeks after tubercle bacilli invade the human body the disease can be diagnosed by this test.

2. There is a strong likelihood that the tuberculin test is our only *criterion as to when to begin treatment* that may actually cure tuberculosis. It is already being used quite extensively in this way. If antimicrobial drugs will ever cure tuberculosis in the strict sense of the word, they must be administered as soon as possible after invasions of tubercle bacilli occur. The presence of these invasions can be detected early only by the tuberculin test. At that time the lesions are located in various parts of the body, they are small and have good blood supply so that drugs in the blood stream may be expected to contact all tubercle bacilli. Tuberculous lesions later lose much of their blood supply, after which there is little hope of drugs contacting the tubercle bacilli. Although embalming solutions are germicidal and are introduced under pressure, they fail to reach necrotic tubercle bacilli containing areas in dead bodies. Indeed, living and virulent tubercle bacilli have been found in human bodies exhumed four months after they have been well embalmed.

3. It may well be that the tuberculin test will be our only *method of determining when to stop treatment*. There is reason to believe that when all tubercle bacilli are destroyed in a human body, the tissues will lose sensitivity to the protein of the tubercle bacillus and will fail to react to the tuberculin test. When this occurs antimicrobial drugs may be discontinued.

On April 3, 1953, John Adams, chief of the Department of Pediatrics, School of Medicine, University of California Medical Center, Los Angeles, wrote: "We are affiliated with a hospital where a low income group of patients is seen. We are making a survey there of positive tuberculin in children and families, and I have been intrigued by the idea of treating the early converter when known, regardless of symptoms or findings with antimicrobial drugs. I

would like to follow these patients with tuberculin tests at three- or six-months intervals to see what the reversion rate might be when the early converter is treated thoroughly."

This study which is now in progress, as well as one on animals, should determine whether it is possible with present chemotherapy to destroy all tubercle bacilli in a child's or animal's body so sensitivity to tuberculin is lost, thus indicating when drugs may be discontinued. Dr. Adams' scientific attainments admirably qualify him to undertake this study, scheduled to begin this fall. Tuberculosis workers throughout the world will have their eyes turned on his study and can be assured of strictly honest reporting of facts established.

4. The tuberculin test is our best *epidemiological procedure*. When a person is found to react characteristically to tuberculin, a contagious case is responsible. If the tuberculin reactor is a recent converter, regardless of age, the infectious source is not far away in point of time and often can be found by examining adult associates. Wood and Mantz found that tuberculin testing of kindergarten and first grade children, followed by examination of adult associates of reactors, resulted in a 10 times greater yield in discovery of clinical cases of tuberculosis than the yield obtained by mass x-ray surveys. Other workers have had similar experience.

5. The tuberculin test often *places responsibility in cases that come to litigation*. For example, a student nurse who had repeatedly been a nonreactor to tuberculin was placed in contact with a patient who had pulmonary malignancy. This individual also had contagious tuberculosis which was not detected until after several days of hospitalization. In due time the student presented a characteristic tuberculin reaction, but x-ray films of her chest were clear and remained so until some years later, when a shadow-casting tuberculous lesion appeared. An attempt was made to place the responsibility on the hospital where she was working when this gross lesion evolved. However, an industrial commission ruled that the hospital where she was in training when she became infected with tubercle bacilli was responsible.

6. Only by the tuberculin test is it possible to *determine the magnitude of the tuberculosis problem* in any group of people. This test readily detects those who are harboring tubercle bacilli, and it is they who constitute the problem.

7. Only the tuberculin test *determines accurately and with reasonable promptness the effectiveness of a tuberculosis control program*. Illness and death from tuberculosis are usually reflections of infections that occurred long ago and therefore should not discredit a control program that began after these infections occurred. Testing all persons in a community, a

county, or a state preliminary to establishment of an eradication program determines just what the situation is at that moment. After the program has been operating for five years, testing children born since its beginning and comparing the number of reactors with those among children from birth to five years before the program started, accurately determines the effectiveness of the first five years of the program. Similar subsequent testing and comparisons provide information that can be obtained in no other way.

Thus the tuberculin test is so important that without its use eradication of tuberculosis is impossible. With relatively few but unimportant exceptions, all persons, regardless of age, who are harboring tubercle bacilli will react to this test. Individuals who react characteristically have tuberculous lesions varying in size from those which are microscopical to those large and dense enough to cast x-ray shadows. Areas of disease too small to be detected by x-ray films may later evolve to such size and consistency as to cast visible shadows.

This work cannot all be accomplished at once, but it could be done in a surprisingly short time if it were introduced as a project for each community. Kansas has 1,641 physicians under the age of 70 years, of whom 939 are general practitioners. There are also 6,363 nurses in this state, of whom 3,584 are active. Immediate concentration of effort on these professional groups would yield good dividends. Many of them are willing and ready to enter the campaign enthusiastically. They need only to be informed of the magnitude of the present problem and their part in its solution.

With good organization, one person can administer the tuberculin test to about 300 persons per hour. Nurses administer this test as well as physicians. The intracutaneous method of Mantoux is most used in this country. The epidermal or patch method is also being employed extensively. Dr. Michael L. Furcolow is now attempting to improve the materials used in this test so it may be as efficacious as the Mantoux method.

Kansas has 400 veterinarians who have set the pace and deserve much credit in controlling tuberculosis in both animals and people. They have long used the tuberculin test as their sole diagnostic agent in case-finding. They knew that every animal which reacted characteristically to tuberculin possessed tuberculous lesions, even though many were microscopical. In 1924 they began countywide tuberculin testing of animals, and by 1935 all of the 105 counties had been completely tested and Kansas had met the requirement for accreditation.

In 1924, 17,522 cattle were tested and 1,575 reacted. Of these, 169 were so badly diseased that their carcasses were condemned to rendering tanks. In 1935 tuberculin tests were administered to 37,853

cattle, of which 3,276 reacted and 119 carcasses were unfit for food. There are now 4,341,000 cattle in Kansas, of which 271,379 were tested during the biennium from July 1, 1952, to June 30, 1954. Just 156 (0.06 per cent) reacted, of which 17 presented visible lesions and only 7 were condemned to the rendering tank. Thus veterinarians have "caught up" with tuberculosis so that rendering tank losses are exceedingly small, and in 127 of the 156 reactors one may assume that the lesions were not yet large enough to be seen by the naked eye at post mortem examination.

The veterinarians' tuberculin testing problem is more than twice as great as that of testing people. Although 1,740 cattle have to be tested to find one reactor, veterinarians continue to test. They know that eradication will not be achieved as long as a single animal reacts. If tuberculin testing were to stop now, this contagious disease could again become rampant among cattle. Thus, veterinarians are continuing to protect people against the bovine type of tuberculosis and can be added to the group of professional workers who have an important role to play in the present and future educational and case-finding program.

Tuberculin testing in any given area, or in the whole of Kansas, would quickly enable one to divide the population into two groups, those who are and those who are not now harboring tubercle bacilli. Thereafter, the attack on tuberculosis could be made in a scientific, practical, effective, and economical manner. In fact, a spot map of an area or of the state would show where the tubercle bacilli now reside.

Kansas is one of the states to which many of us have long looked as being among the first to eradicate tuberculosis. In 1945, Dr. Seth Cox, your executive secretary, wrote me about the tuberculin testing he was doing in rural areas. He tested 36,995 children ranging from pre-school through senior high school, of whom only 2.7 per cent reacted. Of the 2,006 children six years old or under, only 0.74 per cent reacted; among the more than 12,000 children from 15 to 18 years, inclusive, only 3.7 per cent reacted. Of the 2,873 adults tested, 16.9 per cent reacted. Dr. Cox published this material in September 1948 under the title *The Tuberculin Test: A Vital Factor in Tuberculosis Control*.

His work was done nearly a decade ago; with the fine control work since, one might expect a decreased incidence. These extremely low figures in rural areas probably do not obtain in the cities of Kansas, but even there the incidence of tuberculin reactors would probably be surprisingly low. Even in Kansas City, Missouri, Wood and Mantz periodically tested children and found the annual conversion ratio 0.8 per cent.

Three countywide tuberculin testing surveys in

rural Minnesota have revealed that about 22 per cent of the total population are harboring tubercle bacilli. A fourth county is now being tested. The distribution of reactors is most encouraging. Relatively few were among children and young adults, showing that this age group has benefited most by the tuberculosis control program. However, after the age of 40, in some areas as many as 40 to 60 per cent were found harboring tubercle bacilli. These are the generations who were children before control measures were well under way. They are still harboring tubercle bacilli acquired long ago.

One might anticipate that not more than 20 per cent of Kansas' 1,965,112 citizens are now harboring tubercle bacilli, and those show a preponderance in the upper age brackets. This is roughly about one in every five persons. It is among these individuals that the tuberculosis problem lies today, and whether the problem becomes larger or smaller will depend upon when these individuals are found and how they are managed. As soon as they are found by the tuberculin reaction examination, x-ray film inspection of their chests might be expected to reveal significant clinical lesions in 1 per cent or even less. Some composing this 1 per cent are already sources of contagion and need isolation and treatment. Others have demonstrable active clinical lesions in the precontagious stage, most of whom are apparently in excellent health. For the most part they can be treated so effectively as to prevent their disease from becoming contagious or to cause illness.

Among the remaining 99 per cent of the tuberculin reactors, an annual crop of clinical lesions will evolve to be found and managed. This necessitates at least annual examinations which, if well done, will detect the slowly growing lesions before they produce symptoms or become contagious. By proper management the tubercle bacilli these persons harbor will remain corralled. *Failure to examine tuberculin reactors periodically in the past has been largely responsible for the preponderance of cases that are advanced when found.* There can be no relaxation in these annual examinations as long as tuberculin reactors are alive.

Principles involved in such a program have been firmly established. This is the only method that is economically sound. It excludes waste of time, effort, and funds on four citizens in every five who do not harbor tubercle bacilli and thus cannot have tuberculosis at the moment. Nevertheless, some of the four uninfected citizens in every five are still in danger because there are in this state unfound persons with uncontrolled and contagious tuberculosis who are certain to infect them. There are others whose disease will become contagious before they can be found. Therefore, it is imperative for some time that all present nonreactors be tested periodically in order to

find those who do become infected. The possibility of curing tuberculosis in recent converters emphasizes the importance of this procedure.

This modern program is so different in its emphasis from that of the past that a large task lies ahead to change the thinking of the public in order to maintain continued support. Until now we have talked about finding lesions large enough to cast visible x-ray shadow, lesions that cause illness or liberate tubercle bacilli. If a survey did not reveal such lesions, it was thought to be unsuccessful. Now our citizenry must know that the characteristic tuberculin reaction indicates the presence of the forerunners of such lesions and that by finding these precursors at the proper time we may be able to destroy the disease.

Once the citizens of Kansas are informed that the concept of just controlling tuberculosis has been abandoned and has been replaced by refined methods leading to eradication, complete support will be assured. We may then expect the buying of Christmas seals to be increased and all other necessary support to be intensified. It is obvious that this is a momentous program, but it must be so because of the magnitude of the problem.

Through the efforts of the past, tuberculosis in this state has been so reduced that your sanatorium waiting list of a few years ago has been absorbed and some of your 499 beds were vacant in 1953. In fact, at the Norton State Sanatorium, with 445 beds, the average daily population in 1953 was 393. This fine showing may not be improved or even maintained for a while. The number of persons requiring hospitalization may increase.

A high percentage of displaced persons are harboring tubercle bacilli, and a considerable number have already become clinical cases. There is evidence that much tuberculosis has been brought from other countries by war veterans. Tuberculosis is notoriously a relapsing disease. Therefore, some who have been treated successfully, even long ago, will again require hospitalization. A sizable number of cases could be cited whose disease broke down a quarter and a third of a century after it was successfully controlled. We do not know what the relapse rate will be among those now being treated by antimicrobial drugs and resectional surgery. Many of them may again require institutional care. Among the present probable 20 per cent apparently healthy tuberculin reactors are many who will have clinical tuberculosis in their remaining years.

Tuberculosis has been only wounded. A wounded animal is most dangerous. Many a person has lost his life because he did not sense the danger on approaching such an animal.

Nowhere is tuberculosis treated more satisfactorily than at the Kansas State Sanatorium and the Thoracic Diseases Unit of the state university. Even if the de-

mand for beds markedly decreases over the next few years, it would seem unwise to close or convert to other uses any of the hospital and sanatorium beds.

In appraising the citizenry of the new emphasis on tuberculosis, special techniques can be helpful. One of proved value consists of *certifying schools with reference to tuberculosis control work in progress*. This is a project that was adopted about a decade ago by the Committee on Tuberculosis of the American School Health Association. It has been so thoroughly tested that there is no question about its value in stimulating interest, disseminating information, and promoting activity against tuberculosis. Qualifications have been established by which individual schools and systems of schools may be certified. Actual participation of school children and personnel is the best means of conveying information.

A subcommittee has been appointed in each state to work with its state tuberculosis and health association. Whenever a school qualifies, an official certificate is issued bearing the name of the school, signed by the president and executive secretary of the American School Health Association, the chairman of the State Subcommittee, and the executive secretary of the State Tuberculosis and Health Association.

In one state more than 2,000 schools have been certified, and many others are about to qualify. Several other states are starting to certify schools this fall. It is almost unbelievable to what length parent-teachers' organizations, school children, and entire communities will go to win certificates for display on the walls of their schools.

When grade school children react, a careful search is made among their adult associates to find the responsible case. When high school students and personnel react, they are promptly examined for clinical disease. Both have yielded good returns. In some communities practically every person in and out of the school system, young and old, has been examined in the process of qualifying schools for certification.

I know of nothing else that would enlist the interest and support of the citizenry of Kansas so quickly and so effectively in the tuberculosis eradication program. If your 285,444 grade school children, 92,260 high school students, and 17,823 teachers were put to work on such a program, the entire citizenry would soon be ready for the all-out eradication procedure.

The Future of the Private Practice of Medicine

Chester S. Keefer, M.D.

Washington, D.C.

I thank the members of your committee for inviting me to speak here tonight. It is a pleasure to be in Kansas City once again, and I congratulate your leaders in the university and in the medical profession for their outstanding efforts in solving some of the problems of medical care in their local communities. Your programs of continuing education are examples that can be followed and initiated with profit by all universities and all medical societies.

The title of my paper may appear to be very ambitious indeed, but it is always stimulating for the physician to look ahead and to attempt to make a

forecast of the future. Prognosis is one of the most important functions of the physician. It is one that changes from time to time with advances in medicine and with changes in environment. It is a subject that needs continuing exploration because it is beset by uncertainties.

I believe that you will agree with me when I say that it is extremely hazardous to make any predictions concerning the future of medical practice. But the subject is not new. The thoughtful person always studies the past because it is as Shakespeare told us—the prologue. The future of medicine and its practice has been the subject of considerable debate, especially in the past 50 years, and it has been particularly lively in the past 20 years.

The organized profession of medicine has turned attention periodically to the current and future trends of private practice in the United States, and it is well to review the subject on a continuing basis. The

Presented at the first Ralph H. Major Lectureship, November 16, 1954, during the internal medicine refresher course at the University of Kansas Medical Center, honoring Dr. Ralph H. Major, professor of medicine and of the history of medicine and chairman of the department of the history of medicine.

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objective of such reviews is to determine how the best medical care can be provided for the people in a changing environment.

In 1921, the late Frank Billings, one of America's great physicians, wrote an essay, "The Future of Private Medical Practice," and with your permission I shall quote a paragraph from this paper.

"In the evolution of modern life, society has been and still is characterized by financial greed and by extravagant expenditures for luxuries and pleasures which appeal to the physical rather than to the spiritual man. The cities afford opportunity for display, social pleasures, and for possible success in a professional and financial way. This tempts migration of the professional and the business man, including the young men of the farm, from the country to the city. This migration has increased within the last few years in spite of the more livable conditions of village and rural life, through the advantages of rural free delivery, the interurban trolley and motor cars. At the present time more than half the population of the United States is urban. Thus there is an excess of physicians beyond the need of the city public, and a dearth of medical men to supply the need of the rural population. This breeds discontent and disappointment in the medical profession in the city, and the rural public suffers from the need of a sufficient number of doctors. The country physician lacks modern facilities for diagnosis and for the needed hospital treatment of his patients."

Many of the statements made by Dr. Billings in 1921 are applicable today.

Medical practice in any community reflects the health knowledge of the people, the accessibility of facilities and health personnel, the education of the physician, and the economic security of the people. In the past three decades, phenomenal changes have occurred in all of these factors that influence medical practice. The changes have been so rapid and so numerous that it is difficult for either doctor or patient to assimilate them completely.

The recent trends and shifts of emphasis in medical practice suggest to me that the physician and the profession, working closer with laymen who want and need their advice and help, will determine the nature of medical practice in the future as in the past. However, members of the medical profession will determine their own future and destiny only if they continue to consider themselves a part of the general public. They must not consider themselves men apart because this is one of the great perils of professionalism.

The profession must be devoted to the welfare of the public and continue its practice and pursue the art of medicine as a public service. The tradition of the medical profession is a duty to the patient, to

the profession, and to the public. Professional service to the public is authoritatively declared in the codes of professional ethics that are taught by precept and by example, and they are made effective by discipline of the organized profession. Codes of ethics are for the protection of the general public and not for the protection of individual doctors or vested interest groups.

All physicians have rights as citizens and as members of a profession. But, in addition to rights, the medical profession has certain privileges and prerogatives which are allowed by the people and enjoyed under the law. These privileges are permitted by the public by reason of confidence in the integrity of the profession and in the belief of its general beneficence and by right of specialized knowledge. The medical profession exists only as the people allow it to maintain its prerogatives. We should be acutely aware of these privileges and appreciate what the profession enjoys. Those who are conscientious will not take advantage of these privileges. Those who are thoughtless—and certainly those who are not entirely honest—will do so.

I have already stated that medical practice has changed greatly in the past 50 years. These changes are due to many factors such as increased knowledge due to research, improved medical education, the application of new knowledge, extended public health practice, the change in the relationship between the practitioner and the specialist, the growth of health insurance, group practice, and the development of the hospital and the health centers as focal points for the distribution of health services.

At present, the profession is striving to fuse the art of healing with the new science of medicine. Each of you individually and through your profession is contributing toward this fusion. You are doing this in your work by improving public relations, physician-hospital relationships, voluntary health insurance, and the level of public understanding of total health problems. As individual practitioners you are making the new medicine of today a reality by combining the healing art, which requires sympathetic understanding of the patient's personality, his strengths and weaknesses, with the application of medical technology in clinical practice. Similarly, in your dealings with community problems, as a group, you are using your talents as physicians and as scientists in attempting to find solutions to the economic and social problems of medical care.

Tracing some of the changes that have occurred in the private practice of medicine, in hospital care, in methods of financing medical care, and in medical education and research will help to indicate the values of the past that we must all strive to preserve or restore in the medical practice of the future.

PRIVATE PRACTICE OF MEDICINE

Among the most significant changes in the private practice of medicine are the deterioration in the competitive position of general practice, the increase in number and variety of specialists, and the emergence of group practice. I shall briefly consider the impact of each of these developments.

The Family Doctor or Personal Physician. In 1923, about 1 in 10 of the 146,000 physicians in the United States limited his practice to some specialty. In 1949, the proportion of full specialists had increased to 3 in 10, and today it continues to rise. The decline in the resulting proportion of physicians who gave all or part of their time to general or family practice is perhaps one of the most deplorable developments in the period and may well be at the root of many of the problems of medical care today. Patients complain that the doctor has no time to listen to what they have to say, and they wish that the doctor would look at them more and the x-rays less.

In the family doctor of the past the healer predominated, and though his scientific knowledge had grave gaps by present-day standards, his advice, guided by his understanding of the patient and his family setting, happily altered the patient's life while nature cured the ailment. Nostalgically the patients of today look to all physicians for the same type of sympathetic interest in their personal problems; yet at the same time they want the best in modern scientific medicine. The family doctor of 30 years ago would have been puzzled at the need to write books with such titles as "Patients Are People" and "Patients Have Families." Increasingly, the doctor of today and tomorrow, as healer and scientist combined, will find satisfaction and reward in family practice, for medicine is being guided back to primary preoccupation with a person as a human being.

I foresee the personal doctor of the future as the most important single unit in medical care. He will be the well trained internist, because the internist of today is not a specialist in the strict sense of the word. Like the family doctor of the past, the family physician of the future should serve as health adviser and health educator and as a leader in developing the health resources of the community.

He will differ greatly from the family doctor of the past, however, in the resources at his command. In addition to his black bag, he carries with him the potentialities for ready access to top-notch consultants in the medical specialties, to hospitals with their resources, and to a wide range of preventive and rehabilitative services. Through him, the patient will be assured continuity of care, adequate interpretation of his health needs, and understanding of his problems as a person, without sacrifice of the quality

of care he receives. In good medical care there is no substitute for the personal doctor-patient relationship.

Specialism. The specialist is and will of course remain an essential, necessary, and important person in medical care. As medical knowledge expands, new specialties will emerge, each requiring years of study to assimilate and augment techniques of diagnosis and treatment. In the future, however, specialists can be used more wisely if their services are properly correlated with those of the family doctor.

In any discussion of the problems of specialism and the future of medical practice, it is essential that the relations of the specialist and the practitioner be examined on a continuing basis. It must not be forgotten that in discussing this subject, there is a third person to be considered; namely, the patient. I submit that his rights take precedence over those of the other two. The correctness of this conception will be generally admitted, but I believe you will agree with me that in actual practice it is often overlooked.

A large part of the current discontent with medical care on the part of the patient stems from the fact that the relations between the specialist and the non-specialist are not always such that they are in the best interests of the public and the patient. The discussion of these questions must be lifted from the level of a trade or business to that of a profession; that is to say, how can the relations of the specialist and the practitioner be improved so that the patient or the public will be the prime consideration. These are matters that the profession as a whole must solve. The specialist must place himself in the place of the family physician and vice versa, and then they must both place themselves in the place of the patient. When this is done, many of the difficulties of conduct, ethics, fees, relative glory and distinction, status and rank as reflected in special societies, associations, colleges, academies and certifying boards will disappear.

Many of our present problems originate from the isolation of the various specialists from each other and from a lack of physicians who interpret and integrate the several fields.

The family or personal physician is the one to advise the patients about all health matters. He is the central figure. He utilizes the services of the specialists when they are needed.

Group Practice. The teaching hospital, since the beginning of scientific medicine, has demonstrated the value of group practice. All of the teaching of medicine in our medical schools centers around the principle of the group approach to the care of the patient. It has assembled under one roof, for both bed-patients and out-patients, the diagnostic and therapeutic equipment and personnel needed for the care of the sick.

Group practice for home and office care is a more recent but equally significant development. It achieves economy by avoiding duplication of expensive equipment and ideally provides the link between the personal physician and a wide range of specialists. One of the objectives of group practice is to devise a means by which the best interests of the public are conserved and a working plan by which patients of moderate means may receive the benefit of the skill of specialists.

The upward trend in group practice from a total of 239 groups in 1932 to an estimated 500 in 1950 will undoubtedly continue as small hospitals and health centers, linked with the facilities of the larger medical centers, attract both general practitioners and specialists to the communities that now lack medical resources.

There are many different types of group practice, and experiments in group practice coverage are being carried out in some areas of the country in an attempt to meet the problems of medical care as they exist in a local community. No group enterprise in the practice of medicine will be successful unless the patient is the prime consideration, and no group enterprise will be successful unless it meets the needs of a local community. The group must be tailored to meet such needs. They will naturally vary from one community to another.

There are dangers connected with group practice. To mention a few: there is a danger that a machine-like routine instead of individualist investigation may be made; there is danger that the results of various technical examinations made by individual members of the group may add very little except expense to the patient and that they will not be reviewed by some sane, judicial physician who will see that this assembled diagnosis is made up of many parts joined together as a whole; there is danger that the practice of medicine may be placed on a commercial basis—that the group may become a profiteering partnership and that the profession of medicine may further degenerate into a trade.

There are other questions that give many grave concern with respect to the development of group practice, the most important of these being what will be the relationship of the general practitioner or the family physician to the group. Will he be a member of the group or will he be in good standing with it? Will he be able to return to his position as family adviser to the patient who seeks the services of the group? Will he have rights in the group hospital? What will be his status in the community hospital? Is it possible that the family physician will shrivel up into nothing more than a physician who makes a tentative diagnosis and who, like the admitting officer of the out-patient department, assigns the pa-

tients to the proper specialist? Is it possible that the general practitioner will become merely the emergency physician called in for minor ailments or when the specialist is not available on Wednesday afternoons, nights, and week-ends?

For group practice to be successful it must make a contribution toward providing the best medical care at a cost that the patient can afford to pay. The position of the family or personal physician must be maintained as one of honor, dignity, and remuneration. He must be an honored member of the group and not what so many specialists refer to as a "feeder." He must be more than the ordinary or emergency doctor who responds to calls in the night, sews up the scalp wounds, or prescribes the sleeping pills or the sedatives for the maladjusted.

Here, again, I submit that in all group enterprises, the welfare of the patient comes first. Good relations must be established between specialist and non-specialist and maintained at the highest professional level.

HOSPITAL CARE

Because of the closely integrated facilities and personnel provided by modern hospitals, the volume of hospital care in the United States has increased enormously in the last 20 years. Admissions to registered hospitals in 1934 represented 61 persons per 1,000 population. By 1952, the admission rate had reached 121.4 per 1,000 population. Along with this increased utilization of hospitals, the costs of medical care have mounted and are continuing to rise.

Since hospital care has had a great impact on medical practice in the past 20 years, and since it has had a profound effect on the total costs of medical care, this aspect of medical practice needs to be explored in an intensive manner. Hospital-doctor relationships need to be studied in a continuing manner with the patient receiving prime consideration. We have a fourth party entering into these problems; namely, the insurance companies or the hospital service organizations, and they have had an impact on medical care and will continue to have an effect on medical practice as it is carried out in hospitals. The Commission on Financing Hospital Care and the Conference on the Care of the Long Term Patient give many guide lines to possible solutions of these problems.

I wish to turn attention now to the subject of medical care insurance and its impact on the future of the private practice of medicine.

HEALTH INSURANCE

In the last 20 years health insurance has emerged as an almost revolutionary factor in medical practice. In the main, health insurance is concerned with the method of paying for health services. Whatever one's

personal and professional views of this new influence on medical practice, one must recognize its accomplishments and its shortcomings, its potential values and pitfalls in the organization and distribution of medical services as well as in methods of financing medical care. I maintain that some forms of health care insurance are here to stay. In the final analysis, the type of health insurance that will be available will be determined by the public, because it is vitally interested in health protection plans.

There are many evidences that, lacking adequate utilization of chronic disease institutions and nursing homes, home care, out-patient care, and care in doctors' offices, the load on hospitals will continue to mount, and hospitals will be called on to provide services that could be given equally effectively and more economically elsewhere. For long-term care of chronic diseases, for example, and for care of infirm aged persons, nursing and convalescent facilities and home-care programs, if linked with any needed hospital care during acute episodes, can solve many of these problems.

Estimates of the Health Insurance Council indicate the rapid growth of voluntary health insurance in the past decade. Some kind of insurance against hospital expense was carried by nearly 98 million people in the United States in 1953, representing nearly 3 in 5 of the population. In 1941, only about 16 million were covered by hospital insurance.

In addition to their hospital insurance, some 75 million people had some kind of insurance against surgical expense in 1953, as compared with less than 7 million in 1941. The number who have additional insurance protection to help meet the cost of physicians' services for other than surgical treatment has risen from about 3 million in 1941 to 36 million in 1953.

For the most part these forms of protection against some of the expenses of medical care are limited to care in hospitals. To the extent that they are so limited, they tend to increase the pressure for hospitalization when out-patient or home care, or care in less expensive facilities, would be equally advantageous.

By and large the present provisions for voluntary health insurance have several serious gaps. I might list a few for your consideration, confident that you and all others concerned with health problems will work earnestly and wholeheartedly toward methods of extending this new form of financing medical expense to wide effectiveness and to more people.

1. The effect of health insurance on the utilization of physicians' services for periodic health examinations and home and office care should be extended. A 1952 Medical Economics Survey found that private practitioners see nearly three-fourths of the

average daily number of patients in their offices. Home visits and hospital visits represent about one-tenth and one-fifth, respectively, of their daily patient load. The full value of voluntary health insurance cannot be realized until it is designed to strengthen and broaden the doctor-patient relationship in health and in rehabilitation as well as in serious illness.

2. Ways must be found to extend health insurance protection to individuals who are missed by the principle of group enrollment. Also ways must be found to cover more of the elderly, the retired people, the pensioners, the unemployed, and those with low income.

3. Ways must be found to expand and intensify rehabilitative efforts so that persons suffering from disabling chronic illness and defects may be restored to usefulness.

I have indicated that the people of the United States are interested in health insurance because they know that the costs of illness have been rising and they know that these costs are unpredictable. They want to buy protection against these unforeseen contingencies so that they may be able to meet all or a major part of the cost of illness when it strikes and avoid financial catastrophe.

There are two prevalent views concerning the types of health insurance that will cover the needs of the people. One is compulsory health insurance, operated by a state, local or central government; the other includes all voluntary prepaid plans, operated by health service organizations, private insurance carriers, and co-operative organizations or societies. One of the strongest bulwarks against a compulsory health insurance plan is the further development of voluntary plans. If these plans are to meet the test, they must cover more people, and the benefits must be increased. Also, the practice of medicine must be organized so that the services are rendered in the most efficient and the most economical manner. Health protection plans are not designed to increase the cost of medical care, but they are designed to help people pay for sickness through the insurance principle; namely, the spreading of the costs of illness among covered groups by prepayment.

The present administration has rejected compulsory health insurance as a means of meeting the problem of financing the costs of medical care. It proposes to encourage and stimulate private carriers to experiment with untried risks by a sharing of these risks through a reinsurance fund. The proposal is designed to speed up the coverage of more people who can afford to buy insurance and to make plans available that will provide larger benefits, plans that will cover major expenses for major illness, plans that will provide more adequate benefits for short-term, high-cost

illness, plans that will reach individuals and groups in the less densely populated communities who are difficult to enroll at present.

The success of prepaid voluntary health insurance in the future will depend upon whether it can provide sufficient benefits to the people to make them feel economically secure when sickness strikes. Any plan that fails to give the needed economic security for health protection by a voluntary method will lead to the other path, namely, the compulsory method. We need to build on our voluntary plans in order to take the offensive against the compulsory plan.

ROLE OF RESEARCH AND EDUCATION

The role of the historian is an analytic but relatively passive one. In describing the past he can be content to point out the whys and wherefores of the present. The role of the soothsayer is equally circumscribed and relatively easy so long as he and his hearers do not survive to disprove his prophecies. We in the medical profession today, however, must be both. As teachers, practitioners, research workers, and community leaders we *build* the future of medicine from our knowledge and experience of the past.

Our resources in this task are many. As of the present, we can count on public and private support for medical education and research so that the physicians of tomorrow will be superlatively equipped in the art and science of medicine. We have an increasingly health-conscious and health-informed public with whom to work. We have the highest standard of living in the world and even in our own history. We have the aid of many groups in our joint endeavor. Above all, we have elected representatives

and public servants in Washington who are dedicated to the goal of improving the health and welfare of Americans without weakening their capacity for self-help.

Medical research is bit by bit encroaching on the frontiers of the unknown and is helping us solve many of the mysteries of the chronic diseases that constitute our most serious health problems.

Medical education is being increasingly oriented toward the prevention of illness and the fusion of the art of healing with the science of medicine.

Experience in rehabilitation is proving dramatically that long-term invalids and helpless cripples can not only live with their disabilities and limitations but live useful and satisfying lives.

In summing up, in this talk on the future of the private practice of medicine, I have touched on such topics as the role of the family doctor, the relationship between the specialist and the non-specialist, the impact of group practice, the increased utilization of hospitals, prepaid health insurance plans, and medical research and education. All of these factors will play a role in the future as they have in the past, but the emphasis will be different. The medical profession must take the lead in all of these matters and it must provide the best medical care for all of the people. This is our duty; this is our tradition. In our practice, we must never forget that the profession is devoted to the welfare of the public and that we practice the art of medicine as a public service. If we remember these simple truths and apply them, the future will be secure and the people and the profession will retain maximum freedom.

CORRECTION

Shepard Shapiro, M.D., author of a paper which appeared in the December 1954 issue of the JOURNAL, "The Hypoprothrombinemia-Inducing Activity of Warfarin Sodium (Coumadin Sodium)" has advised that an error was made in identification of the structural formulae. The formula labeled "Dicumarol" should be labeled "Tromexan" and vice versa. The formulae, reproduced from a drawing, were published on Page 688.

Panhypopituitarism Is Easily Missed

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There would perhaps be little reason to rehash the problem of pituitary insufficiency if the diagnosis of this condition was usually obvious.¹ The converse appears more probable, however, and we should like to present three cases which illustrate various facets of this complex syndrome.

Each of the following people to be described had recognizable diagnostic signs which were present from one to six years prior to the discovery of their pituitary lesions. This is urgently important because two of them suffered irreparable damage—one to vision and one to psychic function, and the third was an inadequate person during the time she was untreated.

CASE HISTORIES

1. Mr. W., Case 311, white male. When seen first in March, 1953, he was 40 years of age. His complaints were those of weakness, cold intolerance, gradual loss of body hair, and loss of libido and potentia for the past three years. In addition he felt that he had "an odd smell" about him, and he believed that his acquaintances noticed this and shunned him to a certain extent because of it.

Past history indicated that the patient had not felt really well since 1936, at which time a positive serology had been discovered and arm and hip shots were given for six months. In 1946 the patient was treated by liver injections and hydrochloric acid by mouth for a rather severe anemia, and he was told that probably he was losing blood from hemorrhoids. He was seen at another institution in 1947 because of an acute illness characterized by high fever, stiff neck, and delirium. A spinal tap at that time revealed 95 lymphs, protein 120, and a negative colloidal gold curve. The spinal fluid Kolmer was reported as doubtful. There was diminished visual acuity in the left eye, and the left pupil was dilated and fixed. The diagnosis was acute sinusitis.

On examination in March, 1953, the patient was

noted to be markedly pale, the skin was dry, and the reflexes were typically myxedematous with a slow rise and fall best demonstrated in the biceps tendon. The testes and prostate were atrophic. The optic discs showed bilateral pallor, and the body hair was markedly diminished. Neurological examination was not remarkable. X-ray of the skull indicated thinning of the floor of the pituitary fossa and enlargement of the fossa, together with an irregular area of calcification superimposed on the pituitary area. I-131 uptake, using 24-hour count over the thyroid, was 3 per cent. Visual fields were normal. The patient was dismissed on thyroid, cortisone, and testosterone and, because of a continuing delusion of a bad odor, x-ray treatment was given the sella. There has been no subsequent change in the patient's olfactory delusion. However, his general health is remarkably improved with a normal blood count, changes toward normal in the skin, and normal libido and potentia. The March 1953 laboratory reports are summarized in Table I. See Figures 1 and 2.

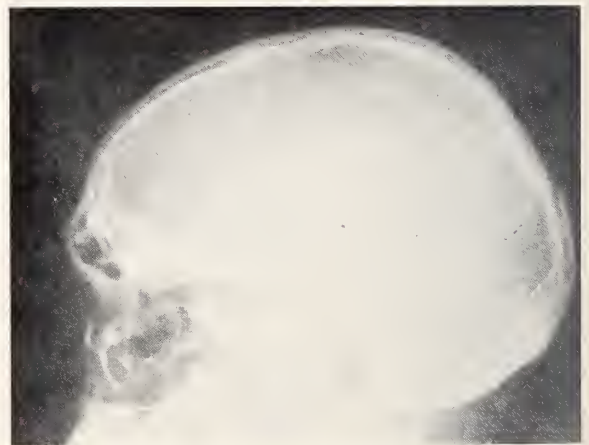


Figure 1, Case History 1. Note the moderately enlarged sella. There is also suprasellar calcification in this film.

TABLE I

	HB	RBC	BMR	CHOL	17 KS	CSF Protein	CSF Cells	Water Test	Fasting BL Sugar
Mrs. L.	11 gm.	3m	-40	204	17 mg./24 hrs. (on ACTH)	15 mg. %	2	Part II 20	85
Mr. E.	12 gm.	3.2m	- 6	200	not done	30 mg. %	3	Part II 10	75
Mr. W.	10 gm.	3.4m	-17	260	2 mg./24 hrs.	50 mg. %	1	Part II 10	80

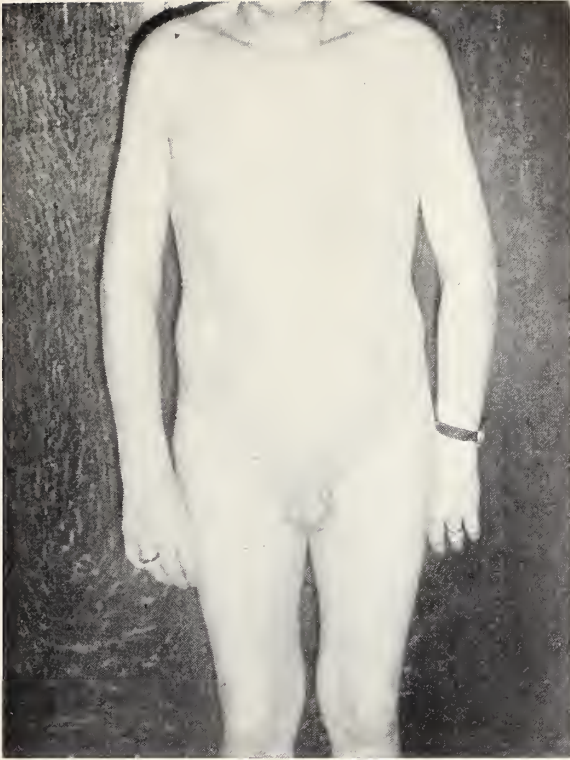


Figure 2, Case History 1. Note the pale, zombi-like appearance typical of panhypopituitarism, also the absence of genital hair.

2. Mrs. L., Case 4974. The patient is a 47-year-old married white woman who was first seen in January, 1954, complaining of fatigue, cold intolerance, dryness of the skin, and amenorrhea. History indicated that the patient stopped menstruating suddenly at age 40, without hot flashes and with no periods since. In 1948 she developed an acute left frontal headache and was hospitalized as an emergency in the city hospital, where a diagnosis of encephalitis was made. The spinal fluid at that time showed only a moderate red blood count. She made an uneventful recovery from this illness but since then—that is, for the past seven years—has noticed increasingly the complaints listed above. She had had various symptomatic treatments prior to being seen in 1954, but no definitive diagnosis had been made.

She illustrated the typical appearance of panhypopituitarism with a pale, puffy skin, markedly decreased body hair, and considerable lethargy. Visual fields and neurologic examination were negative. An x-ray of the skull revealed an enlarged sella. The patient was dismissed on the usual end-organ treatment of estrogen, androgen, cortisone, and thyroid. In addition she was given ACTH with the idea that perhaps the latter drug is more physiologic in these cases than cortisone.² She improved rapidly and was soon able to take the responsibility of running a nursing home which she had previously had to give up. This was

important because she is responsible for the education of her two children and is their sole support. Laboratory studies prior to treatment are in Table I. See Figure 3.

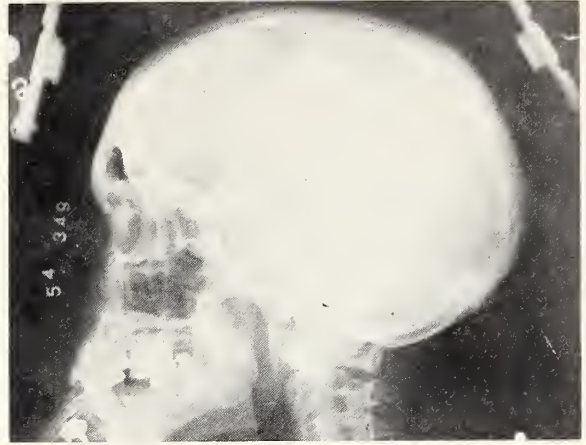


Figure 3, Case History 2. Note the enlarged sella and the posterior inferior erosion of the latter.

3. Mr. E., Case 3281. The patient is a 40-year-old white male who was first seen in August, 1952. At that time he was complaining of progressive loss of vision and impotence—the latter had been present for the previous five to six years.

He had served successfully as an enlisted man in the Army and had an honorable dismissal in 1946. He had consulted a reputable oculist in 1947 because of failing vision. He was told at that time that he had optic atrophy, but no further recommendations were made. He was married in 1947 and had never been able to have intercourse because of impotence. He stated that in adolescence he had been able to have satisfactory intercourse so his present complaints were a definite change with regard to past history.

Examination in 1952 revealed the typical facies of panhypopituitarism with a pasty, dry, thin epidermis, a rather dull look, and myxedematous reflexes. Body hair was scanty throughout. The testes were somewhat small, and the prostate was definitely atrophic. There was optic atrophy, worse on the right than the left, and marked contracture of the visual fields, particularly temporally.

An exploratory craniotomy was performed, and the neurosurgeon exposed a golf-ball-sized mass in the region normally occupied by the pituitary gland. On aspirating this mass the surgeon obtained approximately 30 cc. of what appeared to be venous blood. It was decided by the surgeon, although the lesion by x-ray and clinically was thought to be a craniopharyngioma, that the vascular connections made it impossible to remove. Therefore, the right optic nerve was sectioned in order that the optic chiasm might swing to the left and preserve vision in the left eye, and the

craniotomy was closed without further surgery. Post-operatively the patient was placed on the usual regimen of cortisone, androgen, and thyroid and shortly began to develop whiskers and body hair and experienced libido and potency that he had not enjoyed in years.

An interesting sequel occurred which was entirely unforeseen in that after he began to develop sexually his wife came to the office in an acute depression. She related that she was unable to face the prospect of sexual intercourse with the patient, whom she apparently visualized as a child physically and emotionally, which is actually what he was during their marriage. She stated that if the patient continued to develop along the normal lines that he was indicating, she would either be compelled to divorce him or would become a mental patient herself. The situation was further complicated because the patient's vision was only enough to enable him to get around and because his wife always had been the breadwinner in the family; the patient would be left high and dry without means of support if they were separated.

Needless to say, this type problem produces a dilemma for the doctor that is difficult of solution. Should one deny a male the treatment which makes him relatively normal because the wife prefers to have an impotent husband, or should one treat the male and allow the wife to become mentally ill—or, perhaps more properly, more mentally ill—and produce a situation which would eventually end in divorce? See Table I for pretreatment laboratory work. See also Figures 4 and 5.

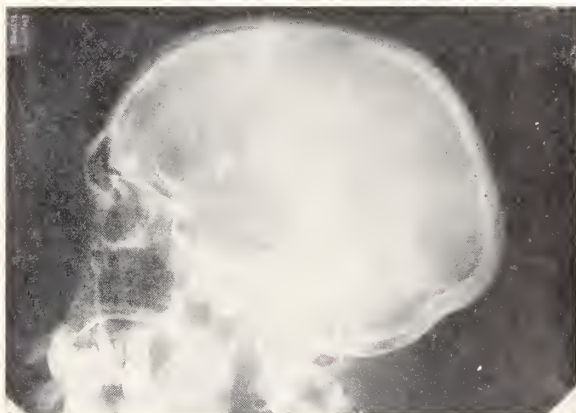


Figure 4, Case History 3. Note the enlarged eroded sella and the ring of suprasellar calcification. This is typical of a craniopharyngioma.

COMMENTS

In thinking about the philosophy of how one avoids missing diagnoses, we believe that we usually recognize a syndrome as one would greet an old friend—that is by familiarity. But lacking this, one must be able to synthesize the possibilities from any given facet. For example, pallor is the hallmark of panhy-



Figure 5, Case History 3. Note the pallid, puffy appearance characteristic of panhypopituitarism. The absence of axillary and genital hair is plain.

pituitarism; in fact, patients afflicted with this disease are unable to become tanned by the sun. Therefore, if we will take the time to look further for a cause of pallor when the usual reasons for it do not fill the diagnostic requirements, the true facts may become apparent. Thyroidal myxedema causes the same type pallor. However, one must be alert to search for pituitary lesions as myxedema may be but a part of panhypopituitarism.³ Other cardinal features of the latter syndrome are amenorrhea, impotence, loss of whiskers, axillary and pubic hair, headache, tunnel vision, and often refractory anemia.^{4, 5} The genital organs may be atrophic. Cachexia is not often present.

The common causes of panhypopituitarism are obviously any tumor, including craniopharyngioma, or vascular destructive process which impinges in or on the pituitary. A not so obvious cause is infarction of the pituitary following post partum deep shock, called Sheehan's syndrome. A facet—as above—of this disease is the failure of pubic hair to regrow after being shaved for delivery.

Laboratorywise one needs to realize that the positive findings will reflect only the variable parts of the pituitary which are destroyed. For example, if the thyrotrophic moiety of the pituitary is involved, there may be severe myxedema. Interestingly the serum cholesterol is seldom elevated in pituitary myxedema so that the finding of a normal cholesterol with a low basal metabolic rate should suggest hypopituitarism.⁶ If, conversely, the adrenotrophic portion

of the pituitary is destroyed, there may be hypotension, fasting hypoglycemia, insulin sensitivity, but seldom electrolyte changes and never the Addisonian pigment. The water test (which can be run in any hospital) is almost invariably positive. There may be lymphocytosis and eosinophilia. The 17-ketosteroids are depressed.⁷ Urinary follicle-stimulating hormone is below normal. Of course x-ray findings of an enlarged sella are most helpful; however, the sella may be normal as it is in Sheehan's syndrome.

Treatment is not difficult once the diagnosis is made. It is most important to know that cortisone or ACTH must be given before thyroid is started. If the reverse order is followed, results may be disastrous. This is so because apparently thyroid medication in the presence of myxedema and decreased adrenal function produces stresses which may be fatal. Lacking a pituitary preparation which is effective, we are forced to give end-organ treatment except for ACTH. We use 10 units of ACTH gel daily or 12.5 mg. cortisone twice a day. Thyroid can be worked up to two grains daily, and estrogens and androgens are given until the desired end point is obtained.⁸

Desoxycorticosterone is usually not necessary. Surgery is employed when headache or visual loss is progressive. X-ray is recommended in the remaining cases of tumor.

SUMMARY

A plea is made for earlier recognition of panhypopituitarism. Three cases are presented, and the cardinal features of the disease and its treatment are discussed.

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Before World War I, a tailoring firm which claimed in the chaste pages of the *Saturday Evening Post* that it purveyed its talents and worsteds to the business and professional leaders of the land, had this as its slogan: "If you think clothes don't make any difference in a man, try walking down the street without any."

Just a touch of paraphrasing and we have: "If you think doctors don't make any difference in a community, try living in one without any."

*Mr. Frederick W. Ware, Managing Editor
Omaha World Herald*

Blood Volume in Traumatic and Hemorrhagic Shock

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INTRODUCTION

It was at the outbreak of World War I that investigators became interested in the dynamics of shock. It was then that the first accurate blood volume determinations were devised. The results of that period were summarized in the classic work of Cannon⁵ in 1923. With World War II investigation in shock received further impetus, and a tremendous amount of work was done. Wiggers in 1942⁵³ attempted to organize this information. With the advent of isotopes, there has been renewed interest again.^{11, 44, 47} Recently Frank¹⁸ wrote an excellent monograph on the present status of the shock problem.

In the present attempt to correlate experimental and clinical findings concerning the relation of blood volume to the shock syndrome, it again becomes apparent that it is as true now as it was in 1942 when Wiggers stated, "A review of existing reviews does leave the impression, however, that if they have any short-comings, these are (a) that many writers have marshalled and oriented experimental discoveries so that they seem to support only one favored theory of shock; (b) that in the zeal to crystallize conceptions concerning the mechanism of shock, *conclusions* have been accepted too generously in place of *demonstrated facts*; and (c) that the experimental conditions under which incontrovertible results have been obtained were not always carefully scrutinized and evaluated."⁵³

DEFINITION

At the outset we are unable to adequately define shock. There are many clinical variations of the syndrome, and it becomes difficult to know what anybody else means when they use the term. Findings in shock depend on etiological factors. In this discussion we will be concerned primarily with shock due to trauma and hemorrhage. This type of shock is recognized by hypotension, weak, thready pulse, drowsiness, pallor, perspiration, cold extremities, thirst, diminution in circulating blood volume. If it is not corrected, it leads to a state of irreversibility and death. Not all of these findings will be present in each case, but common to all is a decrease in blood volume.

Clinically shock also can be divided into (a) impending shock in which the pressure may not have fallen appreciably and in which only perspiration, drowsiness or excitement, and pallor are found; (b)

decompensated phase which shows most of the findings including low blood pressure; and (c) irreversibility in which restoration of blood volume does not restore circulatory dynamics and death results.

The study of the shock problem is difficult from a clinical standpoint because the patient in shock is an emergency. To attempt experimental manipulations on the patient under these conditions is dangerous. It is not possible to control etiological and contributing factors in clinical cases, so comparison of cases is of limited value. Some of the studies in the armed services have taken advantage of the more or less uniform type of shock-producing trauma, but these studies are also full of variables. So we have to turn to the laboratory and thus to animal experimentation for some answers, attempting clinical correlation when possible.

MEASUREMENT OF BLOOD VOLUME

There are two general methods of blood volume determination. One method measures plasma volume, using dye or tagged plasma constituents. The other measures cell volume directly, utilizing the radioactive tagging of red cells. Total blood volume is then determined from the total plasma or cell volume and the hematocrit. The technique for the dye T-1824 or Evans' Blue has been very carefully worked out, and results by different investigators are comparable.²³ Storaasli⁴⁶ used radioactive iodinated plasma proteins and found on humans that values obtained were smaller than those obtained with T-1824. Aust and co-workers,¹ also using radioactive iodinated human serum albumin (RIHSA), confirmed these findings.

The other general method of blood volume determination involves cell-tagging methods. Fe⁵⁵, P₃₂, K₄₂, and Thorium B have been used, and the results are in general comparable.^{2, 3, 21, 31, 32, 33, 36, 40, 43, 51} These methods give a direct reading of the red cell volume of the body. Using P₃₂ Nachman³³ found the red cell volume 20 per cent less than the value obtained with T-1824. He felt this difference was due to the discrepancy between the venous hematocrit and the body hematocrit. In shock this discrepancy is 26 per cent.²¹ Berson and Yalow,² in simultaneous determinations using P₃₂ and RIHSA, found in every instance the whole blood volume evaluated by the tagged albumin dilution was greater than that derived from dilution of tagged cells. Hevesy²⁴ believes that K₄₂ method is more accurate than P₃₂. In general it can be stated that the T-1824 method gives a fairly

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accurate determination of the plasma volume, although the RIHSA is probably more accurate, and P_{32} values for red cell volume are accurate. Total blood volume from the dye method gives values too high. The most accurate total blood volume determinations will be obtained by measurement of both plasma and red cell volume and adding the two.

McLain,²⁹ trying to correlate bleeding methods with dye methods, showed that bleeding gave the most consistent results. The dye studies exceeded bleeding by 67 per cent for rabbits and 44 per cent for dogs.

There are several factors which make comparison of clinical and experimental findings quite difficult and lead to considerable confusion. One factor is the peripheral hematocrit. The technique of hematocrit determination varies with the investigator and is usually not described in his monograph. There is a difference in whether venous, arterial, or capillary blood is used and whether it is taken with or without stasis. How accurately the peripheral hematocrit reflects the actual ratio of total red cell volume/total plasma volume in the body is not known, but available studies^{3, 9, 33, 51} have shown the body hematocrits lower by values from 6 to 15 volume per cent. This discrepancy is believed due to plasma trapping in the centrifuged red cells in the tube and to the plasma lining of the minute vessels.

In any method of blood volume determination there must be complete mixing of the agent in the vascular space. If some portion of the vascular system is stagnant, the results will be inaccurate. However, since it is the physiological volume or the functional circulating volume that is significant in the hemodynamics, the anatomical vascular volume is of secondary importance. The determinations still have value.

Experiments^{26, 28, 55, 56} have shown the effect of anesthetics on shock varies with the agent, but morphine and barbiturates are detrimental to circulatory function.

The accuracy of the peripheral red cell count as routinely performed by laboratories is doubtful. Using photoelectric methods the hemoglobin can be determined within 2 per cent. Other methods that have been used are the specific gravity of the blood and plasma and the total protein of the blood. Each of these has some value if properly interpreted. Taken alone they are not reliable as an index of the patient's circulatory condition.

As to normal values for total blood volume, total plasma volume, and total red cell volume, the best that can be done is to describe the range. The individual variation is wide. Chaudhuri and Chakravarti's⁶ attempt to correlate blood volume and plasma volume with body weight and body surface in healthy Indians

led them to believe that the correlation between blood volume and body surface is the better. They found an average plasma volume of 47.7 c.c./kg. or 1,591 c.c./sq. meter body surface. There was a wide individual variation in all factors. Other reports are comparable. Gregersen and Nickersen²³ tried to correlate blood volume to body types but could draw no definite conclusions. Evidence seems to indicate that failure to account for body types is responsible for the difficulty of obtaining normal values. Even if we know the blood volume of a patient in shock, we do not know its relation to his normal volume or how much he has lost. Also it has been shown that in different disease conditions there is a change in the blood volume, and the body functions on that volume until the disease state is corrected.

CIRCULATORY DYNAMICS OF SHOCK

The factors regulating blood volume are many and, for the most part, unknown. It must be remembered that the function of the circulatory system is to maintain the homeostasis or the constancy of the internal environment of body cells. Therefore, it is the blood flow to the tissues and cells which is the primary consideration, not the blood volume or the blood pressure. If the regulating mechanism could be discovered, the greatest barrier to correct therapy of shock would be removed. In hemorrhagic and traumatic shock there is a reduction in circulating blood volume. The body reacts to this blood loss by mechanisms of protection and replacement, mechanisms which operate simultaneously and not sequentially.

In hemorrhagic shock without tissue damage, there is an initial immediate decrease in total circulating blood volume. The loss is whole blood. Both clinically and experimentally it has been found that approximately 40 per cent of the total blood volume must be lost before signs of severe shock are seen.^{14, 37, 47, 49} Mild shock is seen with around 25 per cent of total blood volume loss. In Emerson and Ebert's¹⁴ study of battle casualties, an average loss of 40 per cent was associated with blood pressure less than 85 mm. Hg., while blood pressures over 100 had less than 25 per cent loss. These figures are comparable to most other studies.

Walsh and Sewell⁵⁰ studied the effects of simple blood loss in healthy males. When 500 cc. was taken from the antecubital vein, there were no symptoms at all. With repeated hematocrit, hemoglobin and red blood cell count determinations, they found the lowest values for all tests were seen on the 4th day in all cases. In most instances, recovery was still incomplete on the 24th day. Repeated 500 cc. bleedings three months later produced an immediate fall in hematocrit levels to a mean low at 6 hours. This indicates that hemodilution does not occur immediately but is

a gradual process, and that restoration of erythrocytes and hemoglobin is also a gradual process under these conditions.

Ebert, Stead and Gibson¹⁰ in 1941 reported studies in which from 760 to 1,220 cc. of blood were removed from healthy subjects within a period of 6 to 13 minutes. Five of these subjects showed circulatory collapse with symptoms coming on near the end of bleeding. These symptoms were pallor, cool hands, and sweating forehead. Collapse was sudden with fall in blood pressure, pulse dropping to 36 to 40. Complaints were weakness, nausea, sensation of weight on epigastrium and blurred vision. There was ashen pallor, retching, perspiration, and a slow response to command.

They found a sharp drop in plasma volume with a gradual increase until the end of the 3rd or 4th day, when it was greater than the original plasma volume by an amount approximately equal to the volume of red blood cells removed. When no intravenous fluids were given, the plasma volume increased only 145 to 230 cc. in the first 111 minutes, even when 760 to 1,070 cc. of blood had been removed. During the first two hours, the increase in plasma volume was accompanied by a decrease in serum protein concentration and only slight increase in total protein. This indicates addition of a protein poor fluid. This was completed in less than two hours. Protein concentration then did not change, indicating both protein and fluid were being added as plasma volume increased.

In 3 cases, 1,000 cc. normal saline was added intravenously immediately. There was then a sharp drop in protein concentration and hematocrit, although not as much as calculated if all the saline had stayed in the vascular tree. Three hours after the saline was given, the hematocrit and protein concentration rose, indicating the fluid was leaving the blood stream. After this period, the protein concentration was constant while the hematocrit fell, indicating fluid and protein both being added.

The values for plasma volume in these cases 3½ hours and 5 hours after the saline were 270 cc. and 370 cc. lower than prehemorrhage levels. Qualitative protein changes were not found to occur. The hematocrit gradually fell, paralleling the rate of increase in plasma volume. When saline was given, there was an immediate drop with rise as the fluid left the blood stream, after which the usual gradual drop was seen. The determined and calculated red cell volume did not vary within the first 2 hours, but after that the actual red cell volume was lower than the predicted cell volume. Thus, it appeared to them that the total red cell volume cannot be accurately calculated from plasma volume and hematocrit because the cell/plasma ratio in large and small vessels is different. They felt the increase of plasma volume

or passage of fluid into the vascular space is not a function of pressure but of the plasma proteins.

Large amounts of fluid are not added immediately after hemorrhage. There are no depots of fluid or cells in the human body. Normal blood proteins are added, and they must either be stored as prepared protein outside the vascular space or materials to replace the protein must be readily available. This replacement occurs in the fasting state but more rapidly when on meat diet. No demonstrable numbers of red cells were added during the first 3 days.

Contrasting this report is a study by Berson⁸ that following simple phlebotomy there is a rapid hemodilution resulting in a total blood volume exceeding the original and occurring within 1½ hours. Most studies reported do show that some degree of hemodilution does occur following simple phlebotomy, but it is not of the magnitude that might be suspected.

In a study of shock in battle casualties where there was tissue trauma in addition to blood loss, Emerson and Ebert¹⁴ reported cases of severe shock where average blood loss was between 63 per cent to 80 per cent (patients sustained by plasma). They found that decrease in blood volume was not accompanied by profound anemia, judged by peripheral hematocrit and hemoglobin determinations, in those patients who had not received plasma. Thus they deduced that spontaneous hemodilution, at least during the first few hours, plays a minor role in restoration of blood volume.

They could find no consistent correlation between the pulse, pallor, coldness, mental changes, or degree of hypoproteinemia, and the degree of shock. Almost all patients in severe shock had some degree of anemia. Also it was seen that retention of blood diluent solutions, even when injected rapidly in excess of 2,000 cc. is not of sufficient duration or magnitude to promote significant hemodilution in the recipient. Their average volume of blood and plasma replaced was 2,650 cc.

They found two criteria helpful in estimating the degree of blood volume deficit: (1) The character of the wound. Traumatic amputations, compound fractures of large bones, severance of major vessels, chest wounds with signs of hemothorax, and lacerations of abdominal viscera with hemoperitoneum are accompanied by large blood losses. (2) Systolic blood pressure except in injuries to the nervous system. They suggest that while plasma is a good emergency substitute, it must be used carefully because it produces anemia in oligemia. This anemia is difficult to correct after plasma injection without overloading the circulation. Do not use more than 1,000 cc., and use cautiously in chest injuries.

Elman and Risdel,¹³ experimenting on dogs, believed that differences in hemodilution were due to variation in physical condition, nutrition, hydration,

and size of the dogs. Blood volumes and individual responses were variable. Their results indicate hemodilution usually occurs promptly, is of variable degree, and persists up to 24 hours in nonfatal cases. A supine immobile position retards hemodilution significantly. Rapid hemodilution usually is seen following immediate mobilization and free access to water.

Elman and others¹² found a definite hemodilution occurring uniformly and immediately in response to a single nonfatal hemorrhage. The most pronounced dilution occurred in the first hour but continued at a decreased rate for 72 hours.

With respect to the capacity of the body to hemodilute and its state of hydration, Ingraham and Wiggers²⁷ found that when intravenous saline of .5 per cent body weight was given prior to hemorrhage, the power to hemodilute was markedly improved as was the ability to withstand the shock ordinarily produced. Weston et al.⁵² suggest that the conflicting reports of hemodilution and hemoconcentration may be related more to the state of hydration before hemorrhage than to anything else.

The failure of persons in severe shock to respond to complete replacement of the blood volume has led to the supposition that there is an increase in capillary permeability with loss of fluid into the tissues. Fine and Seligman,¹⁵ using radioactive plasma protein, found that the dog in shock does not lose plasma into the tissues. Similar evidence showed the deficiencies in circulating plasma volume created by hemorrhage did not increase as shock progressed. The phenomena which are set in motion by the initial critical loss in circulating plasma volume and which lead to death do not require that a progressive decline in plasma volume take place. Plasma loss into tissue is, therefore, not a critical factor in hemorrhagic shock.

Pursuing this study further, Fine and Seligman¹⁷ have also shown that in localized areas of injury there is loss of plasma into that area in considerable amounts.³⁰ The actual quantity lost, according to Nickerson,³⁵ in fatal untreated cases was 4.5 per cent of the total body weight, figures which are comparable to the total blood loss by hemorrhage in fatal cases.

Zweifach⁵⁷ conducted studies of the terminal vascular bed in tourniquet shock,¹⁶ and he was able to clearly demonstrate sequestration of blood in the mesenteric capillaries and collecting venules. Shock is thus caused by both local fluid loss in the injured leg and by sequestration of blood. Taping the leg tightly to prevent accumulation of fluid did not, however, prevent shock from occurring if the tourniquet was left on long enough. This indicates rather definitely that there is more involved than just local fluid loss.

Whether or not there are compensatory reserves

of blood in the body is a question. Attempts to mobilize reserves of red cells or of plasma by hemorrhage⁴⁹ or by epinephrine⁹ have been unsuccessful. Pooling of blood in extremities did not cause mobilization. While reserves do exist in some animals, they do not exist in man. Delorme and co-workers,¹⁷ using P₃₂, found evidence that led them to postulate that sequestered red cells are released from some blood depot. The closed sinusoidal system of the bone marrow is considered to be the most likely source of these cells. This is in keeping with the known stimulant effect of chronic anoxemia upon hematopoietic tissue.

It remains an unanswered question as to why, in view of the fact that loss of whole blood causes a pouring out of a protein-poor diluent at a variable rate into the blood stream, the direct addition of such a protein-poor fluid via needle does not restore the blood volume for any appreciable length of time. In some studies done by Hubay and others²⁵ regarding blood volume changes with parenteral administration of modified human globin solution, it was found that after infusion of 500 ml. of globin solution the plasma volume showed an average increase of 278 ml. Following plasma infusion the average increase was 540 ml. Studies on other blood and plasma substitutes are similar.

Another factor which is difficult to evaluate is the condition of the patient in shock contrasted with his state of health prior to onset of shock. Attempts to evaluate this factor by Nelson and Lindem³⁴ in 1950 led them to state that the development of a state of chronic shock in a traumatized previously healthy patient depends upon a number of factors including inactivity, unreplaced blood loss, inadequate protein and caloric intake, infection, and exudative protein loss.

Bed rest alone results in a depletion of the blood volume affecting both fluid and cellular portions and averaging 500 ml. in a three-weeks period.⁴⁸ Depletion of hemoglobin results in the preferential use of protein for the manufacture of hemoglobin, and thus protein depletion and weight loss. Whole blood can supply only a small part of this protein need. Correction of red cell deficits can establish a positive nitrogen balance and makes administered protein available for other needs, wound healing, and gain of weight. The individual who has lost weight from a variety of diseased states is easily precipitated into shock from minor blood loss. He shows definite diminution in blood volume, total red cell volume, and plasma volume. Hemoglobin concentration is an inadequate guide to the hemoglobin deficit in these cases.

Gibson, Seligman, and others²¹ have shown that all erythrocytes are in active circulation at all times in the normal state. They feel 17 per cent of the total blood volume is contained within the capillaries.

Pronounced gradients in the hematocrit of whole blood as it flows from larger to smaller vessels is found. They have demonstrated that there is always a greater reduction in circulating red cells and plasma than can be accounted for by measured external loss. Part may be due to loss into injured areas or intestinal bleeding. There is widespread trapping of red cells within the minute vessels, causing an abnormal distribution of whole blood between large and minute vessels which is not reflected in arterial hematocrit. This degree of red cell trapping is related to the mean arterial pressure.

Out of the work of Shorr, Zweifach, and associates has come a great mass of experimental information on the peripheral circulation in shock. They briefly describe the peripheral circulation response to hemorrhagic shock in three stages: (1) hyperreactive compensatory, (2) hyporeactive decompensatory, and (3) intermediate where each is equally prominent.⁵⁷ Acute hemorrhage accentuates certain normal features of the capillary circulation in the compensatory reaction against fluid loss. The main feature is an augmentation of the vasomotion which contributes to hemodilution.⁵⁸ In the hyporeactive stage there was capillary filling, decrease in return, and stagnation in the venules, along with arteriolar loss of constriction and opening of the precapillary sphincters.

The phenomenon of vasoconstriction accompanying traumatic shock is also in dispute. Vasoconstriction is due to sympathetic reflex discharges initiated by receptors in the aortic arch and also by other factors. This type of vasoconstriction favors the organism only when blood flow to muscles is important. Hence the deprivation of blood from the liver, kidneys, and other viscera is actually detrimental to the body. Experiments with vasoconstrictor and sympatholytic drugs have shown interesting but not conclusive results.^{41, 44, 54}

Shorr makes the point that the vasoconstriction of the larger vessels is mediated by way of the adaptive reflexes which originate in receptors and appear to bear no direct relationship to the blood flow in the terminal vascular bed. The control of the terminal vascular bed is thought by him to be due to humoral factors.

Just how much of the circulatory failure of shock is due to actual loss of blood volume and how much to stagnation is not answered by present experiments. It is known that in late stages of shock and in true irreversible shock there is pooling and stagnation of blood in the gut and the portal circulation. Frank^{19, 20, 44, 47} has shown that there is a severe hepatic venous vasoconstriction in shock which will cause portal pooling. However, this is not the reason for irreversibility in shock, because Eck fistula dogs still develop irreversibility in shock and do not have the portal pooling.

Another circulatory factor of interest has been pointed out by Goldberg and Fine,²² that in hemorrhagic shock in dogs the absorption of glucose and water from the intestinal tract is considerably impaired. Contrastingly, saline is absorbed in shock as well or perhaps somewhat more readily than under normal conditions.

COMMENT

From these studies we can state rather definitely that blood volume studies do have an important place in the diagnosis and management of shock.⁸ The methods are reliable but still too cumbersome to be universally accepted.³⁸ However, in the final analysis the most reliable guide is good clinical judgment.

The value of the usual laboratory determinations of red cell count, hematocrit, and hemoglobin concentration all too frequently fail to reflect the level of total circulating hemoglobin or blood volume.^{4, 21, 38, 39, 42, 44, 45, 47} There can occur a marked decrease in both plasma and blood volume with almost normal hemoglobin concentrations. Snyder⁴⁵ concludes in his study of shock that, "There are no useful laboratory guides in the treatment of shock. The clinical judgment of the attending physician must determine the management."

Warren Cole⁴⁵ also states, "Hematocrit and hemoglobin determinations are worthless in the diagnosis of hemorrhage of only 3 or 4 hours duration. Blood volume studies are much more accurate but still so inaccurate that I am hereby making a plea for research workers to attempt perfection of better methods."

Indirect plasma and cell measurements are inaccurate since large vessel blood concentrations do not accurately reflect total body values. Direct determinations are necessary. Blood volume regulation is a dynamic equilibrium in which the blood pressure, differential osmotic pressure of plasma and tissue fluid proteins, fluid and electrolyte balances, and hematopoietic activity are all factors, but the controlling mechanism is unknown. The various components of the blood can and do act independently.

We are still describing various mechanical characteristics of shock and not basic pathology. For while the associated phenomena in different types of shock modify the pattern of events impressively, beneath them a mechanism exists, which in itself has fatal potentialities and which can produce all the basic phenomena common to all types of shock, namely, peripheral stagnation, lowered systolic and diastolic pressure, lowered venous oxygen saturation, lowered venous pressure, decreased venous return, decreased cardiac output, increased acid metabolites, and death.¹⁵

SUMMARY

In conclusion, the response of the body to traumatic and hemorrhagic shock with loss of whole

blood is one of immediate vasoconstriction and delayed restoration of blood volume. Factors which govern restoration of blood volume are complex and variable. It is generally accepted that some hemodilution with protein-poor fluid occurs soon, but the amount poured into the vascular spaces depends upon individual conditions. The most useful guide to the evaluation and management is clinical judgment. Laboratory studies are not reliable. Blood volume studies do contribute to the over-all evaluation of the case.

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THE MONTH IN WASHINGTON

Editor's Note. The following summary of Washington news was prepared by the Washington office of the A.M.A. for distribution to state and regional medical journals.

With the 84th Congress well into its first session, all indications point to an active year in medical legislation. Many of the bills will founder somewhere along the way, but as of now an imposing number are lined up awaiting consideration in Senate and House.

Confirmation that medical problems rank high in the administration's work schedule for Congress came early in January in President Eisenhower's State of the Union Message. This is the address, delivered in person before a joint meeting of Senate and House, in which the President annually outlines in general terms the condition of the country and the new legislation he believes should be enacted.

This message highlighted the President's objectives, but did not tell in specific terms how he expected to reach them. The details came later, in five additional messages to Congress, including one on health on January 24. The President wants Congress to take action on the following health and medical items:

1. A federal health reinsurance service. This idea was rejected by the House last year, but neither Mrs. Hobby nor Mr. Eisenhower has given up hope for it.

2. A plan to insure better and more uniform medical care for public assistance recipients through larger U. S. appropriations and more administrative controls.

3. Federal assistance in construction of health facilities and in providing more trained health personnel (other than physicians).

4. A new federal program to combat mental illness and return more mental patients to useful lives outside institutions.

5. An improved federal program for aiding crippled children and for maternal and child health.

6. Strengthening of the pure food and drug laws to give greater consumer protection.

7. More attention to "the increasingly serious pollution of our rivers and streams and the growing problem of air pollution."

8. An expanded program for the medical care of military dependents.

9. A voluntary health insurance program for federal civilian employees with U. S. contributions and payroll deductions authorized for the employees.

So much for what the Republican President hopes to get through Congress. It is too early to say how much of this program will have the support of the Congress, now under Democratic control. It is clear, however, that many leading Democrats want to enact some legislation the President didn't include in his program. In the early weeks of the session they introduced scores of bills to carry out their ideas.

Federal aid to medical education is prominent in the plans of many of the Democrats, and some of the Republicans. The bills cover a wide range, some restricted to construction grants but others offering help in meeting operating expenses and incentives to increase the number of students. Other bills offer federal grants to voluntary health plans to subsidize coverage of the indigent, the "medically indigent," the unemployed, and the aged. Because the administration has declared itself opposed to subsidies, it is unlikely that any measures of this type will win the support of Mrs. Hobby's department and the White House.

Members on both sides of the aisle also are proposing greater emphasis on research seeking the causes and cures of such diseases as cancer, heart disease, mental illness, and arthritis. Some of these bills fit in with the Eisenhower program and philosophy and are likely to have White House support at the hearings.

This tendency to stimulate more basic medical research, both at the federal level and through state grants, may be an important factor when Congress gets around to passing the appropriation bills for the various Institutes of Health, the research arm of U. S. Public Health Service.

Several years ago a Democratic Congress took a serious interest in a bill for federal aid to local public health departments. Some of the influential Democrats have revived this idea and are working for its passage this session. As expected, the old Truman-Ewing plan for national compulsory health insurance again is before Congress. The first one to introduce a bill along these lines was Rep. John D. Dingell, a sponsor of the original plan. Later others joined with him in backing the idea, but up to now the open support for it is not extensive on Capitol Hill.

Tabulations from the National Association of Blue Shield Plans show that a total of \$273,723,925 was paid to physicians by the plans during the 12 months ending June 30, 1954.



In the January issue of the JOURNAL this page was inaugurated. As the title suggests, it is not intended that it should be committed to any specific topic, and, rather than being formal or scientific, it may concern almost anything which proved to be of interest to the writer. It is hoped that it may also be of interest to you as readers. Suggestions, criticisms, or other comments will be welcomed.

The design at the head of the page was drawn by William M. Mills, Jr., a practicing attorney in Topeka and the son of Dr. W. M. Mills, a former editor of the JOURNAL and a past president of The Kansas Medical Society. Though art work is entirely a side line with him, and one which regrettably has not been often pursued recently, he has again demonstrated his artistic and creative ability. I am greatly indebted to "Bill" for his kindness in designing this appropriate heading for the page, and hope the reading material may be of comparable quality.

Do you suppose the notes you made in medical school classes will be read (or worth reading) 75 years later? I am sure that mine, if they were still in existence, would fail to excite interest even at this date, let alone in another 50 years.

Not so with some lecture notes made by Dr. C. A. McGuire, formerly one of the recognized medical leaders in Topeka. These notes, written during the "Winter Session of 1882-1883," while he was a student at "Rush," are interesting in that they demonstrate careful physical examination and an understanding of physiology and pathology which shines through the strange and now obsolete methods of treatment. For example, on the subject of "Fracture of the Femur, Neck," we find:

"Usually in old people, rarely in young. Also more frequent in women and usually occurs

as the result of slight violence. . . . *Entirely Within Capsule.* Is entirely cut off from nourishment except what it gets from ligamentum teres, so union is almost if not entirely impossible. Get an increase of synovial fluid so both ends are bathed in it and no chance for a provisional callus and it is very hard to immobilize the joint. . . .

"*Treatment: Within Capsule* Don't expect union. Put him to bed in a comfortable position and a quilt under his knee so legs will be adjusted easy, so leg will be drawn out to about normal length. . . . Let him remain a week or so until inflammation has subsided then begin to prop him up. Let him sit up and leg hang out on a stool, then into an easy chair, and so on to crutches and begin to bear weight on it gradually and in year or so may walk with crutch and cane.

Partly without: may hope for union unless (the patient) is too old or feeble. Put to bed on inclined plane and use adhesive strap and pulleys and weight. . . .

Entirely without: through the trochanters obliquely. Usually considerable shortening. Use extension and pelvic bandages."

(How do you suppose a current description of hip-nailing will sound in 2025? Do we have reason to think that our present methods will last longer than some of the earlier ones?)

"*Fractures of the Patella:* . . . in transverse we get considerable displacement. May be a compound one and open the joint and are Hell to treat. . . . upper fragment is drawn up. Rarely get a bony union. . . ."

Remembering that Lister's paper on anti-septic surgery had been written only 15 years before this, obviously open reductions were not safe enough to even be considered.

"*Fractures of the Foot:* Dress them about the same as fractures of the hand. Adjust as well as you can and pad well. Use your brains."

This last sentence sounds like a wonderful thing to do—often!—O.R.C.

PRESIDENT'S PAGE

Dear Doctor:

I quote with both pride and satisfaction a resolution passed at the last meeting of your Council and House of Delegates. It is as follows:

"The Kansas Medical Society continues its position to favor a single high standard governing the practice of medicine and surgery.

"Therefore, this Society will support and favor any measure that improves the standard of medical practice in the State of Kansas.

"This Society further goes on record to affirm its conviction that the approved standard of medical education is the minimum under which the practice of medicine and surgery may be performed with safety to the public.

"The Kansas Medical Society will welcome from any theory of healing, the invitation to have its schools approved by the Council on Medical Education and Hospitals of the American Medical Association as fully accredited schools of medicine, which, when accomplished, will entitle its graduates to be examined as are doctors of medicine in preparation for receiving a license to practice medicine and surgery in this state."

This resolution, of course, carries with it your pledge to work with and to advise your senators and representatives in all legislation affecting the health and medical care of our commonwealth. The groundwork you have done is already evident in the thinking of the legislature, even though just beginning. Please continue your good work as it is greatly appreciated.

Yours very truly,

Murray C. Eddy, M.D.

EDITORIAL COMMENT

EXCHANGE OF INFORMATION

Kansas physicians, like those in other states, have been known to complain that they don't have time for the reading they'd like to do, that they can't assimilate all the good material that's available. Perhaps to them the scientific papers published in the JOURNAL are less valuable than they are to other readers. We refer to physicians in foreign countries who receive the JOURNAL under an exchange agreement and who do not have access to a volume of medical literature.

Since the first issue was printed by The Kansas Medical Society, the JOURNAL has been sent to other scientific publications with the understanding that they would reciprocate. Consequently, our exchange list now includes all the journals of other state medical societies, many specialty publications, and journals pertaining to various scientific subjects. All copies received by the JOURNAL are forwarded to the library at the University of Kansas Medical center and are there made available to physicians and medical students.

At the end of World War II, a deluge of requests for exchange reached the JOURNAL from publications in foreign countries. Since financial considerations limit the number of exchanges the JOURNAL can maintain, all requests were carefully evaluated by members of the Editorial Board. At present the JOURNAL is being sent to all continents and to a great many countries. The foreign need for American medical literature is apparent in the following quotations from letters in the exchange file.

From Adelaide, South Australia—"We should like to be able to make your journal available in the university medical library, which is the only medical library in South Australia, and we hope that it will be possible for you to accept the exchange."

From the Philippines—"It is with profound regret that we inform you that our library had been completely burned by the ruthless enemy. . . . Principal medical institutions (it is painful to state) had been so utterly destroyed, that unless America and the other United Nations extend to us their helping hands we would not be able to rebuild them. . . . We suspended publication of our journal so the enemy would not be able to use it for propaganda. . . . We beg you to place us again on your mailing list. . . . We had been completely isolated from scientific world during 1942-1944, and you can understand how thirsty we are for new medical knowledge."

(Editor's Note—The Journal of the Philippine

Medical Association was, of course, placed on the mailing list immediately after receipt of the above letter. The back copies requested were sent in packages of a size complying with postal regulations and mailed at the rate of one package per week, also in accordance with postal regulations, until the gaps in the Philippine files were filled.)

From Argentina—"We are very interested to establish exchange with your publication. We edit 4 annuals numbers, with Argentine original articles and medical world abstracts. Our reprint: 15,000 issues. Our readers: all Argentine, Paraguayan and Bolivian physicians."

From Italy—"We address to you our proposal to fix up a regular exchange. . . . If you would like it, the exchange could comprehend the numbers of some previous volumes."

From Victoria, Australia—"Since the war Australian doctors have become more interested than before in American medicine, probably because they met U.S.A. doctors at the front. We therefore hope that you will extend to us the courtesy for which we ask."

From Finland—"Societas Medicorum Fennica Duodecim herewith suggests an exchange of your publications against some of the *Annales and Medicina Fennica*. In case you feel inclined to send us in exchange for our periodicals from previous years corresponding volumes of your own old journals we ask you to kindly make us a proposal to this end."

From Germany—"As we hope that international relations in scientific life will certainly become normalized at an earlier date as those in other fields of human activity, and as we suffered in this country from a long time of seclusion from the scientific life of the outer world, we are especially keen to receive reports on advances in medicine abroad."

From Japan—"Tokushima City, where our school is situated, is on the island of Shikoku, separated from the Japanese mainland, so that, because of communication difficulties, it is not easy to borrow foreign magazines. . . . Any interchange of technical or other relevant information would also be very welcome to enlighten and encourage those of us who are devoting ourselves to medical science."

From India—"As good medical literatures are very few in this part of the world, a small library is started recently attached to the above hospital (St. George's Mission Hospital, Punalur, P.O., Travancore, South India) . . . so that up-to-date knowledge in Medical Practice may be obtained. Further Ayurvedic and Unani systems of Medicine are very troublesome competitors to Allopathic system here and proper equipments and medical literatures are highly essential. . . . I request you to kindly issue a news note requesting the sympathetic members of your Society to send me their used medical journals, with all available backward copies, medical books,

reprints of articles and other useful medical literatures and also second-hand surgical instruments, medical appliances, laboratory equipments, etc. This Act of Kindness and Charity by the members of your Society will ever be remembered which lapse of time cannot wipe away from our memory."

Should we complain that we have too much to read?

FEDERAL AID IN KANSAS

PART V

Federal aid to public health in Kansas is the fifth of this current series discussing the various programs in this state that are aided through the use of federal funds. All programs listed here are directed by the Kansas State Board of Health which collectively received \$2,280,000 in federal funds in 1953. This represents just under one per cent of the total spent by the United States for these programs.

HOSPITAL SURVEY AND CONSTRUCTION

Federal grants for hospital survey and construction were first made available in 1946 and were first used in Kansas in 1949. Appropriations are made to the state, to localities, and to non-profit agencies to assist in determining the need for, and in the financing of, hospital construction. All applications for such aid from Kansas require the approval of the Kansas Advisory Hospital Council.

The administration agency at the federal level is the Department of Health, Education and Welfare. In 1953 the Kansas State Board of Health received \$1,744,330 in federal funds, used in accordance with a formula based on population and relative per capita income of the state. Local participation, not less than one-third of expenditures within the state, accounted for approximately 60 per cent of construction costs.

GENERAL HEALTH ASSISTANCE

Although a federal program of general health assistance became operative with passage of the Social Security Act of 1935, Kansas did not participate until 1943. The general objective is to support local health services and provide, at the state level, laboratory services, vital statistics, and other generalized benefits. The Public Health Service, of the Department of Health, Education and Welfare administers the program nationally.

The total federal expenditure in Kansas for this purpose in 1953 was \$178,997, and the state contributed \$639,116, making a total of \$818,113.

Although local expenditures for the year are not exact, a figure just under one million dollars approximates the amount received from local units.

MATERNAL AND CHILD HEALTH

A program designed to be of special assistance to rural areas and to those suffering economic distress provides maternal and child health services. It promotes maternal and child health through public and professional education, standard-setting, well-child clinics, day nurseries, and co-ordination of medical services and provides professional consultation services.

In 1953 Kansas received \$147,127 from the Department of Health, Education and Welfare for this program. The state itself advanced \$6,401 for a total of \$153,528. There was no local participation. Apportionment of federal funds among states follows a formula allowing \$60,000 per year per state, plus an amount on the basis of live births in the state, matched dollar for dollar, plus an amount based on relative state financial need for which no matching is required.

The federal program began in 1935, under provisions of the Federal Social Security Act of 1935, and Kansas has been participating since 1937.

CONTROL OF TUBERCULOSIS

The federal government entered the field of tuberculosis control in 1944, after passage of the Public Health Service Act, and Kansas participation in the program started the same year. The objectives are to assist in the detection, diagnosis, and control of tuberculosis. The Department of Health, Education and Welfare is the federal administrative agency.

The extent of the tuberculosis problem in a state accounts for 80 per cent of the federal apportionment. Other factors considered are population and relative state financial need. Matching is on a 50-50 basis, with state funds spent for tuberculosis sanatoria included. There is no financial participation on a local basis.

To qualify for receipt of federal funds in this category, each state must submit its program for the approval of the Public Health Service, stating the plan for operation of the program, the type of services to be rendered, and the amount of state funds available. Participating states must also have a merit system for employees and must agree to carry out their programs as described to the Public Health Service.

The federal grant to Kansas for 1953 under this program was \$61,987. Kansas spent \$19,200 in addition to an appropriation to the State Sanatorium at Norton in the amount of \$845,000.

CANCER CONTROL

The present plan for cancer control, inaugurated nationally in 1946, is administered by the Public Health Service. Kansas has been participating since 1948. The allocation of federal funds is based on population and financial need, with one dollar of state funds required for each two dollars from the federal source.

The total spent for cancer control by governmental agencies in 1953 was \$74,532, of which \$50,372 was from federal sources and \$24,160 from state appropriations.

MENTAL HEALTH PROGRAM

The Public Health Service Act of 1944 and the National Mental Health Act of 1946 authorize the expenditure of federal funds, through the Public Health Service, to states for public and professional education, information interchange, and assistance in formation of community guidance clinics. Allocations are made only to states having an approved plan for mental health activities.

Based on population, the extent of mental health problems, and financial need, national funds are advanced at the rate of two dollars for each dollar of state or local funds. In 1953 Kansas received \$43,516 for this purpose and added \$33,604 of its own funds, for a total of \$77,120.

VENEREAL DISEASE CONTROL

Federal funds for the control of venereal disease, determined on the basis of population (20 per cent), extent of the problem (60 per cent), and financial need of the state (20 per cent), are administered by the Public Health Service. The state agency uses the funds for reporting cases of venereal disease, investigating contacts and suspects, supervising clinics, purchasing drugs, and educational work. The federal government contributed \$33,071 for this purpose in 1953, the state added \$14,500, and local units gave \$2,035.

HEART DISEASE CONTROL

With the general objective of assisting in the detection, diagnosis, and control of heart disease, the Public Health Service administers a program on the national basis. The plan has been operative since 1950. Each two dollars of federal funds must be matched by one dollar of state or local money. Since local expenditures are not now known, exact figures on the cost of the Kansas program in 1953 are not available, but the total was at least \$33,767 since the national contribution was \$23,106 and state participation was \$10,661.

YOUR DIRECTORY INFORMATION CARD

The new, 19th edition of the American Medical Directory is now in galley form, and it is expected that the book will be ready for delivery about the middle of 1955. The previous edition was issued in 1950. Since that time, it has not been possible to publish a new edition because changes in the membership structure of the American Medical Association made it difficult to obtain an accurate list of members.

Within the next few weeks, a directory information card will have been mailed to every physician in the United States, its dependencies, and Canada, requesting information to be used in compiling the new directory. Physicians receiving an information card should fill it out and return it promptly regardless of whether any change has occurred in any of the points on which information is requested. It is urged that physicians also fill out the right half of the card, which section requests information to be used exclusively for statistical purposes. Even if a physician has sent in similar information recently, he should mail the card promptly to the Directory Department of the American Medical Association to insure an accurate listing of his name and address. There is no charge for publishing the data, nor are physicians obligated in any way.

The directory is one of the most important contributions of the American Medical Association to the work of the medical profession in the United States. In it, as in no other published directory, one may find dependable data concerning physicians, hospitals, medical organizations, and activities. It provides full information on medical schools, specialization in the fields of medical practice, memberships in special medical societies, tabulation of medical journals and libraries, and statistics on the distribution of physicians and hospitals in the United States.

TUBERCULOSIS CASE FINDING

Using the number of persons who participate in a project as the criterion for evaluation, the Kansas State Board of Health reports that its tuberculosis case finding program is increasingly successful. The project is now receiving more widespread support than it has enjoyed at any time in the past.

To illustrate the point Dr. James M. Mott, director of the Division of Tuberculosis Control, Kansas State Board of Health, compares figures from a 1952 photofluorographic survey in 33 western Kansas counties with a survey of the same counties in 1954. The mobile survey unit was in the locality 99 days

in the September to December period in 1952. In all, 3,415 persons were x-rayed, an average of 307.2 per day. During the same months in 1954, it required 109 days to x-ray 44,540 persons, an average of 408.6 per day.

Since case finding is the first step in eradication of tuberculosis, it is encouraging to note the large number of people availing themselves of the opportunity to have chest x-rays. Dr. Mott attributes this increased interest in the program to the influence of members of county medical societies and to the cooperation of the people of that area.

CLOSED-CIRCUIT TV PROGRAM

The largest closed-circuit television program ever staged will be presented from 6:00 to 7:00 p.m. (EST) on February 24 under the auspices of the American Academy of General Practice and Wyeth Laboratories. The program will be given by six internationally known authorities who will discuss "How to Control Streptococcal Infection."

The television symposium will originate in CBS studios in New York City and will be transmitted to 57 cities in the United States and Canada. The program will be received at two places in Kansas, Battenfeld Auditorium at the University of Kansas Medical Center, Kansas City, and the auditorium of the Sedgwick County Medical Society, Wichita. At the discussion following the program in Kansas City, Dr. Jesse Rising will be moderator; in Wichita, Dr. George L. Thorpe will be moderator.

It is expected that 15,000 physicians will see the telecast. The Kansas Academy of General Practice has announced that it will be an approved study course for formal credit.

A.M.A. TOURS IN JUNE

Plans for two vacation trips, an air tour to Europe and a cruise to Bermuda and Nassau, have been announced by the A.M.A. for physicians and their families who wish to travel immediately before or after the A.M.A. convention in Atlantic City, June 6-10.

Four itineraries, each of four weeks' duration, are available for the European tours sponsored by the A.M.A. and Thomas Cook and Son. Departures from New York are scheduled for May 6, May 8, June 11, and June 13. Details are available from A.M.A. Convention Tours, 5959 South Cicero Avenue, Chicago 38, Illinois.

The A.M.A. Bermuda-Nassau party will sail from New York on June 10, docking in New York on the return voyage on June 18. Information may be

secured from Mr. W. M. Moloney, Room 711, 105 West Adams Street, Chicago 3, Illinois.

NOMINATIONS FOR 1955-1956

A meeting of the Nominating Committee of The Kansas Medical Society was held at the Jayhawk Hotel, Topeka, on January 9, 1955, and the following names were proposed for the various offices to be filled by vote of the House of Delegates at the annual session in May:

FOR PRESIDENT-ELECT

Dr. Clyde W. Miller, Wichita

FOR FIRST VICE-PRESIDENT

Dr. Conrad M. Barnes, Seneca

FOR SECOND VICE-PRESIDENT

Dr. Thomas P. Butcher, Emporia
Dr. Mahlon H. Delp, Kansas City
Dr. Dwight Lawson, Topeka
Dr. Barrett A. Nelson, Manhattan
Dr. Lloyd W. Reynolds, Hays

FOR CONSTITUTIONAL SECRETARY

Dr. James A. Butin, Chanute

FOR TREASURER

Dr. John L. Lattimore, Topeka

FOR A.M.A. DELEGATE, 1956-1957

Dr. George F. Gsell, Wichita

FOR A.M.A. ALTERNATE, 1956-1957

Dr. John C. Mitchell, Salina
Dr. Glenn R. Peters, Kansas City
Dr. Frederick E. Wrightman, Sabetha

The list of nominees is presented now in accordance with provisions of the Constitution and By-Laws. Additional nominations, of course, may be made from the floor at the time of the election.

FILM ON DRUG ADDICTION

A film entitled "Drug Addiction—A Medical Hazard" was shown for the first time last month under the sponsorship of the Federal Bureau of Narcotics and the Department of Pharmacology, University of Maryland School of Medicine. It was produced in association with Winthrop-Stearns, Inc., pharmaceutical manufacturer.

The movie was prepared for showing to medical students as an audio-visual teaching tool. It was inspired by an educational program on the dangers of drug addiction initiated 20 years ago at the University of Maryland's School of Medicine by Dr. John C. Krantz, Jr., who prepared the script.

Carcinoma of the Thyroid

Tumor Conference

Edited by Bernard Klionsky, M.D., and Chauncey G. Bly, M.D.

Dr. Bly: Patients with cancer of the thyroid may present many variable pictures of symptoms, signs, and courses. We have chosen one case today to serve as a basis for discussion.

Dr. Santos: This patient is a 62-year-old colored man who had noticed a smooth, firm swelling in the left side of his neck for 30 years. This swelling had rapidly increased in size in the past five to six years and had produced a gradually increasing sensation of choking. Three years ago he first noted pain in the left hip and back. During a physical examination nine months ago to determine the cause of pain, a smooth colloid goiter was noted.

Initial rectal examination revealed only slight prostatic hypertrophy. However, an x-ray revealed a lesion of the sacrum. On deep posterior rectal palpation, a 7 cm. mass could be felt fixed to the anterior surface of the midsacrum. The nature of this mass was undetermined clinically. He entered the hospital two months ago for definitive diagnosis and therapy.

Dr. Bly: Would you discuss the surgical aspects of diagnosis and treatment of this case, Dr. Kittle?

Dr. Kittle: Our initial problem was to decide whether or not the large sacral mass and the goiter were both manifestations of a single disease process. We did not think seriously of a carcinoma of the thyroid because the probability of such a large metastasis to the sacrum seemed unlikely. It was felt that the sacral mass was part of a completely independent disease process.

In considering various primary lesions of the sacrum which might account for this mass, my first choice was a chordoma, which is not uncommon as a primary tumor in this area. This case had all the clinical features of a chordoma. On rectal palpation the mass was found to be extraluminal. It apparently had been growing only slowly. People with chordomas do have various types of low back pain, which may be continuous and may radiate down the leg. This patient had had severe pain in the left lower back, left heel, and left calf for three or four years. The pain was intermittent, worse at rest, and aggravated by coughing and straining. Roentgenologic examination showed the process to be osteolytic.

Second in the list of possible diagnoses was some

type of sarcoma or other primary bone tumor arising from the sacrum. Third was the scant possibility of an aortic aneurysm. However, the mass did not feel like an aneurysm and it had a most unusual location. We considered doing a needle biopsy of the mass, but again, because of the faint possibility of its being an aneurysm, this was not attempted. Among the possibilities for metastatic tumor masses, renal carcinoma was considered.

Therefore, our preoperative impression was that a large colloid goiter had been present for many years and had recently begun to grow more rapidly, causing obstructive symptoms of dyspnea and dysphagia. Surgery was directed to the relief of these symptoms. At the time of the thyroidectomy the gross diagnosis was still colloid goiter, and we were content to do a subtotal thyroidectomy, leaving the right side intact. A nearby lymph node, biopsied because of the remote possibility of carcinoma of the thyroid, was grossly negative.

Dr. Bly: Dr. Germann, would you demonstrate the x-ray films on this patient?

Dr. Germann: We have, of course, many films on the man. The first shows the large, smooth, soft tissue mass in the left side of the neck (Figure 1). Several others show the rather large osteolytic lesion

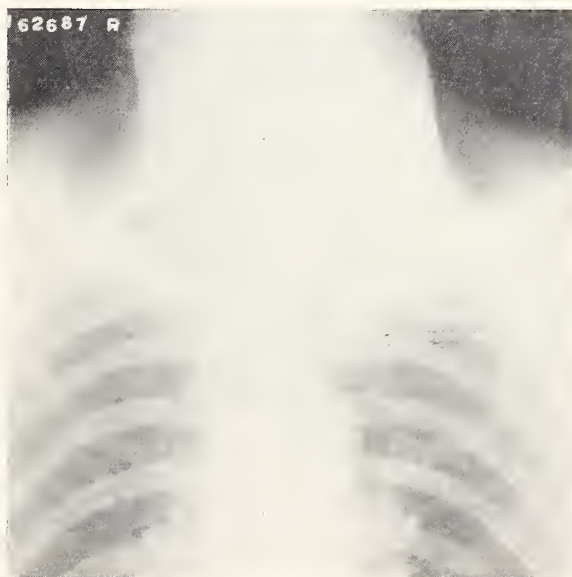


Figure 1. Roentgenogram (A-P) of chest showing smooth bulging soft tissue mass in the lower half of the left side of the neck.

Cancer teaching activities at the University of Kansas Medical Center are aided by grants from the National Cancer Institute, U. S. Public Health Service, and the Kansas Division of the American Cancer Society. Dr. Klionsky is a Trainee of the National Cancer Institute.

in the sacrum with destruction of both sides of the sacrum itself (Figure 2). The lateral film shows extensive involvement of the upper three sacral segments. We cannot tell precisely by the films how far



Figure 2. Roentgenogram of pelvis and sacral spine showing osteolytic destruction of the upper three sacral segments.

anteriorly the mass extended. Films taken of other regions in a skeletal survey revealed no other lesions of bone.

Dr. Bly: Dr. Boley, will you tell us something about the gross and microscopic characteristics of the thyroid tissue removed surgically?

Dr. Boley: The specimen of thyroid weighed 250 grams and was from the left lobe. Many microscopic sections were studied, and the findings were similar. Large acini were lined by tall columnar cells, without scalloping of colloid. Sections from other areas of the thyroid mass show papillary architecture. In other areas there are proliferations of small immature acini that contain no colloid and small groups of uniform, larger undifferentiated cells (Figure 3).

If these many areas were encapsulated, we would consider them to be benign papillary or follicular adenomas of the thyroid, for nuclear variation is minimal. There is, however, no evidence of encapsulation. These changes are also so diffuse that we must diagnose malignancy. Despite careful search, we were unable to find evidence of invasion of the capsule or of blood vessels. Nevertheless, we must interpret the case as carcinoma of the thyroid. No tumor was seen in lymph nodes. Although the left lobe was diffusely involved, we of course cannot say what might be found in the remaining right lobe.

Dr. Kittle: As you may imagine, we were sur-

prised to learn the definitive diagnosis in this case since neither the clinical story nor the gross surgical findings pointed to carcinoma. It certainly is the duty of every surgeon to do his very best, at the time of thyroidectomy, to decide from the gross appearance and relations of tissue whether or not the patient has carcinoma of the thyroid. Often this may be very difficult or impossible, as in this present case. The surgeon should, when in doubt, consult with the pathologist to have him help examine the thyroid and make multiple gross and frozen sections.

If a diagnosis of malignancy is suspected and can definitely be made at the time of the initial operation, the surgeon should proceed with a total thyroidectomy. This is the operative procedure of choice in the surgical treatment of carcinoma of the thyroid. Lymph node dissection may also be performed, depending on the morphology of the tumor and the extensiveness of clinically demonstrable spread. Radioactive iodine has a greater opportunity to localize in functional metastases if the thyroid gland itself has first been removed.

To help us determine whether to do further surgery on this patient, the radiology department in-

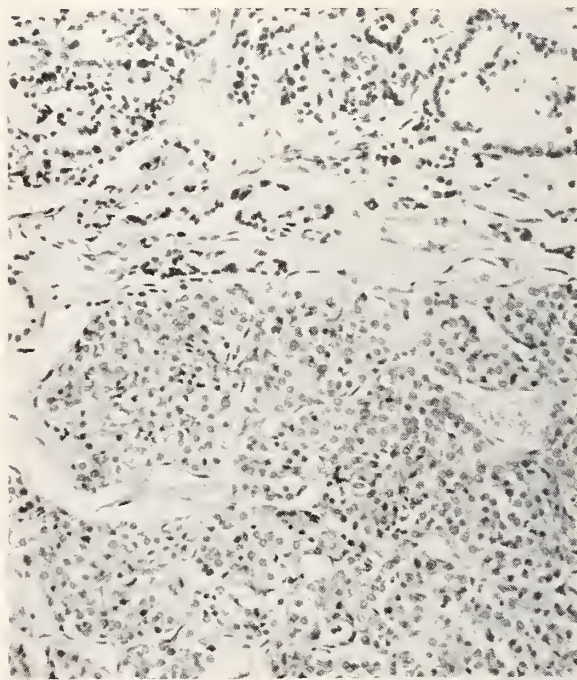


Figure 3. The upper half of field shows colloid-containing thyroid acini. In the lower half there are many small immature acini and undifferentiated cells.

stituted studies with radioactive iodine. We were particularly interested in knowing whether or not the sacral mass represented a peripheral metastasis of functional thyroid tumor tissue.

Dr. Germann: During our initial tracer studies

one week after subtotal thyroidectomy, we tried to determine first the total uptake and, second, the sites of localization of the orally administered dose of radioactive iodine. We hoped that the tumor would be functional and take up I^{131} so that any remaining tumor might be localized and destroyed. Only about 15 per cent was found in the neck of patient, even though the right lobe of the thyroid was still intact.

When we surveyed the patient with the scanning counter, an extremely high amount of radioactivity was found to be localized in the sacrum. About 50 per cent of the iodine was excreted in the patient's urine in the first 48 hours. Therefore, we felt that the remaining 35 per cent was in the sacrum. Since this thyroid carcinoma tissue had shown such high uptake, he was given 90 millicuries of radioactive iodine six weeks ago. That was an adequate dose, although I think he might have tolerated more.

A week after this therapy it was roughly calculated that there were still about 25 millicuries of radioactive iodine in this sacral mass. Knowing this, we placed the patient on his back with an unexposed x-ray film under his sacrum for five minutes to effect proper film exposure. The developed film shows a large central irregular black area. This does not delineate any anatomical detail but does show the large general areas of rather uniform concentration from which the radiation was being emitted.

We saw the patient again one week ago, or five weeks since his treatment with I^{131} . We wanted to do repeat tracer studies to determine whether any of the tumor and its uptake had been destroyed. However, he still had so much residual iodine in his sacrum that new tracer studies were impossible, because the background count would be too high. We estimated that there was still about one millicurie of I^{131} present in the mass. Repeat x-ray films of the pelvis at this time revealed no appreciable changes in the size of the lesion. Clinically, there had been no change in the sacral mass or in the patient's back pain.

Dr. Bly: At this point, then, we are discussing a patient who has had a large mass of highly functional low-grade papillary adenocarcinoma of the thyroid removed by subtotal thyroidectomy. The remaining functional thyroid tissue, including one large mass of functional tumor tissue in the sacrum and possibly other undetectable tumor metastases in the skeleton or in the right lobe of the thyroid, has been given one treatment with 90 millicuries of I^{131} . A longer follow-up will be needed to evaluate this treatment. Dr. Germann, do you think that repeated courses of I^{131} will suffice to cure this patient?

Dr. Germann: I cannot, of course, predict that with certainty. It will depend not only upon whether

the lesion continues to absorb sufficient radioactive iodine, but upon how sensitive the tumor tissue is to the internal radiation. We can evaluate neither of these as yet.

I would like to ask if all patients with carcinomas of the thyroid should have total thyroidectomy. That has not always been the universal attitude. I have seen several patients who, following removal of simple adenomas with invasion, have done well without either total thyroidectomy or radioiodine therapy.

Dr. Kittle: I agree there is room for variation of opinion. Almost any one of several therapeutic methods which can be applied in the management of low grade thyroid malignancies will give good results. In contrast, for patients with highly malignant forms of carcinoma of the thyroid, the prognosis is poor, no matter what is done. I don't know what the final decision will be. I don't believe that a surgeon could be criticized if he did not do a total thyroidectomy in treatment of a solitary adenoma; however, I believe that a complete hemithyroidectomy on the involved side should be performed. In this particular case, if any residual tumor can be demonstrated in the thyroid itself, I think we should destroy the remaining thyroid tissue, either by surgical excision or possibly by external irradiation.

Dr. Bly: Dr. Allen, can you as an internist help us with this particular patient?

Dr. Allen: I saw this patient after his thyroidectomy. I think that the type of clinical story which this patient had is not uncommon for patients with carcinoma of the thyroid and skeletal metastases. In most such patients, the diagnosis is not obvious. An even more confusing picture develops in cases of multiple metastases; in those cases, multiple myeloma is frequently offered as the most likely diagnosis.

I can recall at least three patients with metastases of thyroid tumor in whom there was no obvious primary tumor of the thyroid gland. One patient was first seen with a backache due to compression fracture of a thoracic vertebral body. We palpated the thyroid and found nothing. On careful reexamination later, we did palpate a small nodule, low in the lower fold of the left lobe of the thyroid. It was found at surgery and turned out to be carcinoma.

It is important to remember that the primary tumor may either seem insignificant or be undetectable at all. In any case in which there are skeletal metastases of unknown origin, or in patients in whom myeloma seems to be the diagnosis but the bone marrow biopsy studies are negative, a careful pointed search must be made for carcinoma of the thyroid, both by palpation of the gland and by radioactive isotope studies.

In regard to the problem of whether or not to do a total thyroidectomy in patients with carcinoma of

the thyroid, I think it depends on whether or not there are known metastases. If there are known metastases, and you intend to treat the patient with radioactive isotopes, then one should by all means do a total thyroidectomy of some type, either by surgery or by some external radiation. The reason for this is that, in most cases, one will not be able to induce the metastases to take up the minimum effective amount of iodine until the main thyroid gland is gone.

I think that it is unusual that the metastasis in today's case took up so much iodine with so much of the thyroid gland remaining. It's an old clinical observation, antedating radioisotopes, that in a patient with carcinoma of the thyroid, failure to develop myxedema after thyroidectomy implies metastases. We have often seen that happen in our series here. This man today has had no myxedema at all, implying that he still does have functioning thyroid tissue; we of course know that the entire right lobe was left intact at operation. I feel that if any known metastases are present, as in this case, total thyroidectomy should be completed so that one can treat the metastases more effectively with radioactive iodine.

In the process of working up some of these puzzling patients, pyelograms are frequently done to rule out renal cell carcinoma. Gallbladder visualization may also be done in the search for an obscure primary cancer. However, in such a search for a primary tumor, any use of iodine-containing radio-opaque dyes will interfere with the uptake of radioiodine. Therefore, the radioisotope studies should precede the radio-opaque dye studies.

The radioisotope laboratory must of course be briefed on what is desired. Often one will give at least five times the usual tracer dose of I^{131} and then scan particularly the thorax, back, pelvis, and long bones. If the thyroid tumor is of the more anaplastic cell type, with poor differentiation and function, one can sometimes tease or induce the tumor cells to take up more radioiodine by the administration of an antithyroid compound for several days prior to giving the I^{131} . Again, all normal thyroid tissue should have been removed if possible. Large doses of a blocking drug such as propyl-thiouracil or methimazole are administered in this conditioning process.

If propyl-thiouracil is used, one should give at least 300 mg. a day for a period of about two months, if the patient can tolerate it. During that period of time, a state of myxedema will be developed, if there is sufficient interference with iodine metabolism, and an increase in thyroid-stimulating hormone (TSH) from the pituitary will be thus produced. The effects of TSH on the tumor cells may stimulate an increased affinity for iodine.

The blocking agent or drug is then withdrawn, and about 10 days later a tracer dose of I^{131} is given. If the metastases have then taken up iodine, the administration of a full therapeutic dose of I^{131} is indicated. This procedure can be repeated several times. However, blocking agents should not be given during the next month or so following the administration of a therapeutic dose of radioactive iodine.

Student: Does this same type of procedure also apply in the therapy of hyperthyroidism with radioactive iodine?

Dr. Allen: Yes. Blocking agents hasten exclusion of the iodine from any thyroid tissue, including the normal thyroid tissue. If a patient has already been treated with radioactive iodine for hyperthyroidism, one should probably wait several weeks before giving any such blocking substances. They are contraindicated during these weeks immediately after isotope therapy, because their administration will hasten the elimination of the radioactive iodine from the gland, and the biological half-life of the isotope in the gland may become too short to be effective.

On the other hand, radioiodine can be effectively given to patients with hyperthyroidism as soon as five to eight days after withdrawing the blocking drugs. As a matter of fact, to patients with very hyperactive thyroid tissue and recurrent thyrotoxicosis, we have given radioiodine as shortly after blocking agent withdrawal as two to three days, with gratifying effect. Actually, one can give intramuscular TSH itself to stimulate I^{131} uptake more directly in any of these procedures.

Dr. Bly: I am sure that you are all familiar with Cohnheim's old theory, in the last century, that masses of well differentiated thyroid tissue in the cervical lymph nodes or bones and other sites of blood-borne metastases were either "lateral aberrant thyroid" or "benign metastasizing goitre." These concepts have been reviewed by Willis¹ and have been abandoned by present-day pathologists. However, they are of historical interest in this case where, apparently, we have a sacral mass of fairly well-differentiated but very "aberrant" thyroid tissue functionally picking up iodine. This is certainly a functional metastatic mass in the sacrum, although we can as yet say nothing about its histology or its dependence upon the existence of thyroid-stimulating hormone (TSH) in the body for its continued growth and extension.

Dr. Tice, will you tell us something about the use of direct external radiation to various areas of known metastases, to areas of primary carcinoma which might be remaining in the thyroid, or to microscopic areas which might now be present in lymph nodes but not appear until later?

Dr. Tice: I feel that in most cases of carcinoma

of the thyroid, supplemental irradiation of some sort should be given. Any residual normal or tumorous thyroid tissue may take up radioactive iodine; if so, that may be the ideal approach. However, if radioactive iodine is not successful, external radiation is the choice. One would use two lateral ports and an anterior port for the thyroid region of the neck. Possibly the patient may need a tracheotomy following irradiation. An external dose of about 5,000 r provides a thyroid dose of 4,800 r.

There is a great deal of variation in the radiosensitivity of thyroid tumors. The anaplastic thyroid tumor is often not so radiosensitive as anaplastic tumors of other tissues. In one series of 500 cases treated with radiation, there was a five-year life expectancy of 20 to 70 per cent, depending on the tumor type. Papillary tumors had as high as 70 per cent five-year survival, while the anaplastic tumors and giant cell tumors had at best a 20 per cent survival. I think radiation is a good supplementary treatment in the average case of carcinoma of the thyroid. Surgery, of course, is the first choice of treatment if the patient is strong enough.

Dr. Bly: Dr. Kittle, it has been often stated that there is a high correlation between solitary adenoma of the thyroid and the development of carcinoma. Would you elaborate on that correlation for us?

Dr. Kittle: There is a high correlation between the existence of adenomas, either solitary or multiple, and the development of carcinoma in the thyroid. Such nodules should be excised particularly if solitary, since they are often considered to be premalignant lesions. Estimates vary in the literature, where one can find reports that carcinoma of the thyroid will develop in as few as 5 per cent and in as many as 50 per cent of all solitary untreated adenomas of the thyroid.

I can recall the case of a surgical nurse at our own hospital. She had, no doubt, assisted at many thyroidectomies. She knew that she had a solitary nodule, and she had been advised by several people to have it removed. She insisted that it caused her no difficulty and refused surgery. Three or four years later the nodule was finally excised and was found to be a low-grade papillary adenocarcinoma. By that time, however, a cervical lymph node also contained tumor.

Ward and Hendricks,² from Johns Hopkins Hospital, summarized their experience with some 112 cases of carcinoma of the thyroid. In this series, there were 23 solitary nodules in the thyroid and, of these, 20 were in an aberrant position. These would now be called metastases, rather than lateral aberrant thyroid nodules. In 16 of the 112 patients there were multiple nodules, and in 5 patients the nodules were bilateral. In another 23 of the 112

cases there was diffuse involvement of the entire gland; and in 10 other patients only one lobe was diffusely involved.

Histologically, 61 of the 112 carcinomas were papillary adenocarcinomas of low-grade malignancy. Thirty-seven were classified as alveolar adenocarcinomas of the thyroid, or Hürthle cell tumors, of middle-grade malignancy. The remaining 14 were such tumors as giant cell carcinoma, epidermoid carcinoma, or small cell carcinoma, of high-grade malignancy. Thus, the usual carcinoma of the thyroid is of low-grade malignancy.

Thyroid carcinoma may appear at any age, in young children as well as in elderly patients. The thyroid is the site of one of the most common carcinomas of the neck in children. Carcinoma of the thyroid is relatively frequent in young girls. It seems to have a special predilection for females.

With regard to the association of thyrotoxicosis with carcinoma of the thyroid, 30 of the patients in this series had symptoms of hyperthyroidism, and the basal metabolic rate was elevated in 24.

Dr. Allen: This report of a high degree of association is at considerable variance with other reports. Of course an elevated basal metabolic rate does not establish the diagnosis of thyrotoxicosis. Many other authors have pointed out the very low coincidence of thyrotoxicosis and malignancy of the thyroid. Some have said that as few as one in 1,000 patients with thyrotoxicosis will also have carcinoma. I have never personally seen such a combination of diseases. Therefore, when confronted with a patient who has both a nodular goiter and thyrotoxicosis, we feel relatively assured of the benign nature of the lesion.

Student: I would like to ask Dr. Allen if he would recommend excision of an asymptomatic solitary nodule discovered during a routine physical examination, and if it would make any difference if the nodule was functional and took up radioiodine.

Dr. Allen: I would recommend excision whether the nodule was functional or not. My position would alter if the individual also had thyrotoxicosis, of course, as I mentioned before. I would then be willing to treat him with radioactive iodine and follow him closely. If the nodule had not almost completely disappeared to palpation within two or three months, I would then recommend surgical extirpation. We have followed this procedure with several patients. In those in whom the nodule failed to regress, the surgical specimen showed only nodular hyperplasia.

Distinction must be drawn between types of nodules whenever possible, of course. The hypertrophied colloid goiter and the recurrent goiter may also be irregular and nodular in form, yet not contain adenomas or carcinoma.

Dr. Kittle: Not all solitary thyroid nodules are or become carcinoma. On the other hand, some investigators claim that as high as 80 per cent of all carcinomas of the thyroid have begun in fetal adenomas. This seems too high to me. Furthermore, I don't know how one can be sure in any case how or when the carcinoma began. Morbidity and mortality following thyroidectomy are so low that one should not defer surgical therapy of the solitary thyroid nodule.

Dr. Bly: It was once proposed that the surgeon do serial biopsies of these nodules to see periodically what the cells look like. However, histologic criteria for malignancy in the thyroid are difficult to define, even when known metastases are present. Several people, including Dr. Harry Greene, have proposed using biological criteria, such as the heterologous transplantation of tumor tissue into the guinea pig eye. Repeated biopsy and transplantation of a patient's tumor may help tell when the benign or dependent tumor has become autonomous or malignant. Certainly it is probable that some adenomas are malignant from their inception. Often an encapsulated nodule or adenoma is either wholly malignant or wholly benign throughout.³

Dr. Klionsky: Willis reviews older reports that in endemic goiter areas up to 4 per cent of all cancers are thyroid cancers, whereas in other areas only 0.5 per cent were. In other words, the incidence of thyroid carcinoma was thought to be six to eight times higher in endemic goiter areas. However, Sokal⁴ attempts to refute both this classic concept and also the one that uninodular goiter is more apt to contain carcinoma than the apparently benign goiter which contains no nodules.

Dr. Allen: I heard recently of a study of thyroid disease in the mountains of Peru by an investigative group who brought along their own complete laboratories. Although endemic goiter was present in about three out of every four people in the area, cretinism was uncommon and carcinoma was rare. This, too, would make us wonder about some of our older concepts.

Dr. Bly: It has been pointed out^{3, 4} that currently thyroid cancer is more common among hyperthyroid than euthyroid patients. Therapy with blocking drugs and radioiodine is almost restricted to hyperthyroid patients. The fact that thyroid tumors have been produced in animals with these therapeutic agents^{5, 6} or with iodine-deficient diets⁷ should discourage prolonged indiscriminate and needless use of these drugs.

Editor's note: Follow-up examination was performed on this patient 5 months later. Radioiodine studies reveal a total uptake of only 2 per cent in 24 hours. The radioactivity count over the sacral mass

is markedly decreased as compared with the initial determination. No significant change can be noted in the radiographic appearance of the sacral mass. No further sites of metastasis can be demonstrated.

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Make hotel reservations now for the 1955 meeting of The Kansas Medical Society, Hutchinson, May 1-5.

DEATH NOTICES

IRL EDWIN HEMPSTID, M.D.

Dr. I. E. Hempstid, 63, who had practiced in Hutchinson since 1920, died at his home there on December 19. He had been in poor health for several years and had been critically ill for 10 days before his death.

A graduate of St. Louis University School of Medicine, 1915, Dr. Hempstid began practice in Burrton. During World War I he served in the Army. His practice was limited to surgery, and he was a fellow of the American College of Surgeons. He was an honorary member of the Reno County Medical Society.

ROBERT B. STEWART, M.D.

Dr. Robert B. Stewart, 75, a former member of the Editorial Board of the JOURNAL OF THE KANSAS MEDICAL SOCIETY, died in a Los Angeles hospital on January 19. He had practiced in Topeka for a number of years before 1938, when he moved to California and became chief of the surgical staff of Queen of Angels Hospital, a position from which he retired about a year ago. He was a graduate of Kansas Medical College, Topeka, with the class of 1903. A brother, Dr. James G. Stewart, Topeka, is among the survivors.

ACTIVITIES OF MEMBERS

A paper which was published in the JOURNAL in October, "The Value of Gastrosocopy," by Dr. Henry Laurens, Jr., Salina, was reprinted in condensed form in the November issue of *Digest of Ophthalmology and Otolaryngology*.

Dr. Wendell A. Grosjean, of the Snyder Clinic, Winfield, has been notified of his election to fellowship in the American Association for the Surgery of Trauma.

Dr. George J. Pierron, Olathe, has begun a two-year tour of duty with the Army. He reported at Fort Sam Houston in January. During his absence his practice will be cared for by his associate, Dr. William McCann. After he completes his internship at the Kansas City General Hospital in July, Dr. Robert Fenton will also assist with Dr. Pierron's practice.

Dr. Lambert A. Kerr, Lincoln, who has been in practice for 46 years, announced his retirement on January 1.

Dr. Walter L. Schafer, Wichita, was recently elected an associate fellow in the American College of Allergists.

Dr. Lee H. Leger, Kansas City, was speaker at a meeting of the Leavenworth Rotary Club last month. His subject was heart disease.

Dr. George H. Hassard has announced plans to leave Sedan to study for a specialty practice. His general practice in Sedan has been taken over by Dr. William K. Walker, formerly of Cedar Vale.

Dr. William L. Warriner, Topeka, was one of seven physicians over 88 years of age who were interviewed by a reporter for the United Press. The resulting article on longevity was published in many newspapers throughout the country.

Dr. and Mrs. Francis M. Coffman, Ford, who recently celebrated their 50th wedding anniversary,

were guests of honor at a celebration held at the Ford Methodist Church. Dr. Coffman has been practicing there since 1910.

Dr. C. J. Kurth, Wichita, spoke on "Business and Mental Health" before the January meeting of the Hypatia Evening Club in Wichita.

The Snyder Clinic, Winfield, announces that two new physicians are now members of its staff, Dr. Franklin R. Miller, hematologist and head of the department of internal medicine, and Dr. Charles G. Foster, of the department of internal medicine and radioisotopes.

Dr. DeMerle E. Eckart, Hutchinson, was recently elected to active membership in the New York Academy of Sciences.

Dr. Paul C. Laybourne, of the University of Kansas School of Medicine, took part in a program presented by the Oklahoma Academy of General Practice on February 14 and 15 in Oklahoma City. He presented two papers, "Treatment of Common Emotional Problems of Children" and "Preventive Child Psychiatry."

Dr. S. Paul Hornung, who was released from the Army in January, has announced plans for the opening of an office in Norton. Before entering the service he practiced in Dodge City.

Dr. Rene M. Gouldner, Wichita, was guest speaker at the January meeting of the Sedgwick County Medical Assistants' Society. He spoke on "Recollections of My Trip Around the World."

Dr. Paul D. Adams, Osage City, was recently called to active duty with the Air Force and reported at the Air Force School of Aviation Medicine, San Antonio.

Dr. James H. Holt, Wichita, has been named director of the Wichita University Health Service.

Dr. Lucien R. McGill, Great Bend, has been declared coroner of Barton County. Although he did

not file for the office before last November's election, Dr. McGill was elected on the basis of a write-in vote.

Dr. Henry S. Blake, Topeka, has been elected a trustee commissioner of the National Blue Shield Commission. In that position he will represent Arkansas, Arizona, Colorado, New Mexico, Oklahoma, Texas, Wyoming, and Kansas and part of Missouri.

CANCER CONFERENCE IN WICHITA

Kansas physicians will have an opportunity to learn of new developments in cancer therapy on March 24 and 25 when the seventh annual Mid-West Cancer Conference will be presented at the Broadview Hotel, Wichita. Co-operating agencies are the Kansas Division of the American Cancer Society and the Committee on Control of Cancer of The Kansas Medical Society. No registration fee will be charged.

Attendance at such conferences grows each year, and it appears that more physicians than usual will be present this year to hear the eight nationally known speakers, two surgeons, two pathologists, two radiologists, one oncologist, and one director of biological research.

The complete list of speakers includes the following: Dr. Richard Chamberlain, radiologist, Philadelphia; Dr. Elson B. Helwig, pathologist, Washington, D. C.; Dr. C. C. Little, research director, Bar Harbor, Maine; Dr. John R. McDonald, pathologist, Rochester; Dr. Robert Dulaney Moreton, radiologist, Fort Worth; Dr. J. Herbert Nagler, oncologist, Philadelphia; Dr. George T. Pack, surgeon, New York, and Dr. Henry K. Ransom, surgeon, Ann Arbor.

Short biographical sketches on Dr. Moreton and Dr. Little were published in the December issue of the JOURNAL, and data about Dr. Helwig, Dr. Pack, and Dr. Nagler appeared last month. The paragraphs below will complete the series.

Dr. Richard H. Chamberlain is professor of radiology at the School of Medicine and Graduate School of Medicine, University of Pennsylvania. A diplomate of the American Board of Radiology, Dr. Chamberlain serves as consultant in radiology for the United States Public Health Service and is a member of the Committee on Isotope Distribution of the Atomic Energy Commission and of the International Commission on Radiological Units. He is also chairman of the Commission on Radiological Units, Standards and Protection and a



member of the National Committee on Radiation Protection.

Dr. John R. McDonald, a diplomate of the American Board of Pathology, is well known in his field. He directs the Section on Surgical Pathology at the Mayo Clinic and is professor of pathology of the Mayo Foundation Graduate School, University of Minnesota. He serves as a consultant in cytology for the American Society of Clinical Pathologists, is a fellow of the American College of Chest Physicians and the College of American Pathologists, and is a councilor of the American Association of Clinical Pathologists.



One of the surgeons on the program is Dr. Henry

K. Ransom, Ann Arbor, professor of surgery at the University of Michigan Medical School. He is a diplomate of the American Board of Surgery, a fellow of the American College of Surgeons, and a member of the American Surgical Association, Central Surgical Association (president in 1949), and International Surgical Society. He



was graduated from the University of Michigan Medical School in 1923.

More detailed information on the conference may be secured from the Kansas Division, American Cancer Society, 824 Tyler, Topeka, Kansas.

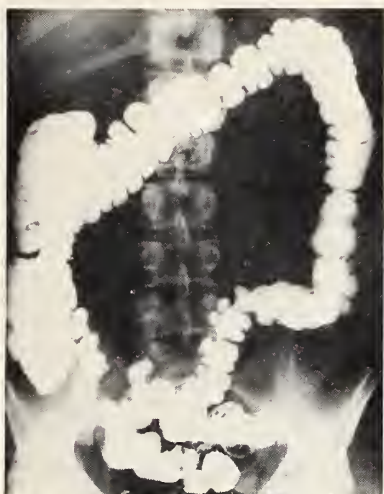
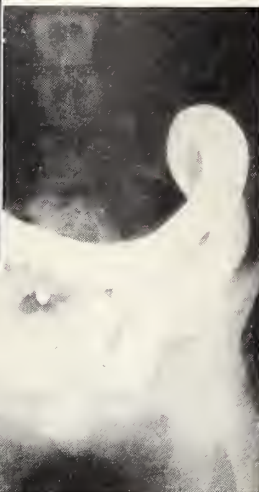
TELEVISION AT 15 POSTGRADUATE MEETINGS

Closed-circuit color television programs will be presented at 15 postgraduate medical meetings in 1955 by Smith, Kline and French Laboratories, according to a recent press release. It is estimated that 60,000 physicians will view the programs.

Smith, Kline and French Laboratories presented the first color television in June 1949 at the annual meeting of the A.M.A. Since that time they have given telecasts for 65 medical meetings at which more than 327,000 doctors were in attendance. To carry out such a schedule, a ten-man unit devotes its entire time to production of the telecasts and maintenance of 18,000 pounds of equipment. The unit is unique in the industry in that it is the only completely mobile television station in existence.

One of the 15 meetings at which television will be shown in 1955 is the session of the Kansas City Southwest Clinical Society, Kansas City, Missouri, October 4-6.

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SEARLE

COUNTY SOCIETIES

Dr. Peter S. Combs, Leavenworth, is serving as president of the Leavenworth County Medical Society this year. Dr. Robert H. Moore, Lansing, is vice-president, and Dr. Carroll D. Voorhees, Leavenworth, is secretary.

A meeting of the Shawnee County Society was held in Topeka on January 3. Dr. John Lamb, Oklahoma City, spoke on "Sunlight Dermatoses."

Dr. Lee H. Leger, Kansas City, was installed as president of the Wyandotte County Society at a dinner dance given at the Town House Hotel on January 8. Other officers are: Dr. Gaylord P. Neighbor, vice-president; Dr. Leland Speer, secretary; Dr. Frank A. Rieke, treasurer, and Dr. Chester L. Young, member of the board of censors. Elected to three-year terms as delegates to The Kansas Medical Society are Dr. Wray Enders, Dr. Agnes L. Robbins, and Dr. C. L. Francisco.

Two speakers took part in the program presented at the regular meeting of the Wyandotte County Society on January 18. Dr. Charles A. Hunter spoke on "The Effect of Paravertebral Anesthesia on Uterine Motility," and Dr. George A. Higgins, chief of surgery at the VA Hospital in Kansas City, Missouri, discussed "Management of Spontaneous and Traumatic Pneumothorax."

Members of the Salina County Society were hosts to the Golden Belt Medical Society at a meeting held at the Salina Country Club on January 13. Dr. V. M. Winkle, of the Kansas State Board of Health, spoke on "The Local Health Officer—the General Practitioner of Public Health." The second part of the program was devoted to a discussion of "Congenital Malformation of the Nervous System," and Dr. D. Bernard Foster and Dr. Robert P. Woods, both of the Menninger Foundation, Topeka, outlined medical management and surgical treatment.

Dr. Aldo A. Luisada, director of the Division of Cardiology, Chicago Medical School, spoke on "Left Ventricular Failure and Pulmonary Edema: Mechanism and Therapy" before the January 4 meeting of the Sedgwick County Society at Wichita. That after-

noon the society inaugurated its plan of holding an informal clinic at a Wichita hospital on the day of a scientific evening meeting. Dr. Ben M. Matassarini was moderator and Dr. Luisada conducted the clinic.

At a meeting of the Johnson County Society, held at Redwood Inn, Olathe, Dr. Donald J. Smith, Overland Park, was named president for 1955. Dr. Edward J. Schulte, Mission, was elected vice-president; Dr. David J. Buddrus, Prairie Village, secretary; Dr. Robert E. Riederer, Olathe, and Dr. George R. Maser, Mission, delegates.

FIGHT AGAINST POLIO

The polio attack rate in Kansas in the year just concluded was about 57 per cent higher than the national average, according to provisional reports of the National Foundation for Infantile Paralysis. Nationwide, the number of cases reported in 1954 was the third highest on record.

Kansas also had a high polio attack rate in the year 1952, when 1,718 polio cases were reported. This record was also higher, by 134 per cent, than the national average for that year. It is impossible to predict when and where polio epidemics will strike, which underlines the need for more effective control measures.

Evaluation of the Salk vaccine, administered to 440,000 U. S. children in the largest medical experiment of its kind ever conducted, is now in progress. Announcement of the vaccine's effectiveness will be made in the spring of 1955.

During the field trials last spring about 8,000 children in Kansas were inoculated with the Salk vaccine.

This year the March of Dimes must do a bigger job than ever before. It must raise \$64,000,000—because \$9,000,000 is needed to purchase vaccine, \$2,700,000 for scientific research, \$2,900,000 for professional education, and at least \$29,900,000 for patient aid, including hospitalization. The March of Dimes has expended \$203,600,000 in patient aid since 1938.

CATALOGUE OF HEALTH BOOKLETS

A catalogue of A.M.A. publications available for distribution to patients was issued recently by the A.M.A. Bureau of Health Education. Hundreds of pamphlets on personal and family health problems are listed. Copies of the catalogue are available on request.

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1. American Medical Association: New and Nonofficial Remedies. J. B. Lippincott Co., Philadelphia, 1954, p. 147.

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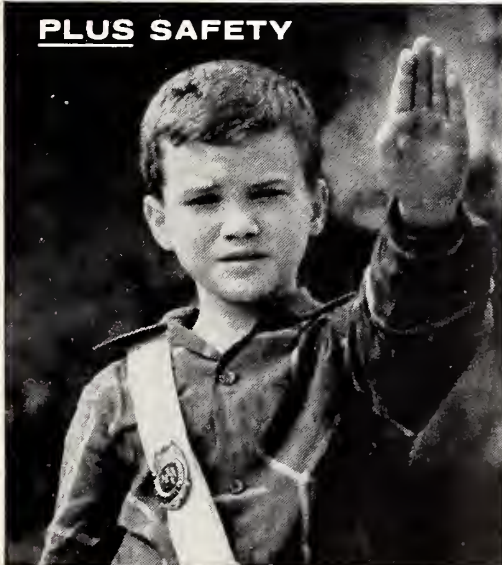
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Johannes Müller, Father of Scientific German Medicine

Thomas J. Fritzlen, M.D.

Denver, Colorado

The great place in 19th century medical science held by Germany did not have its beginnings in antiquity, nor did it come about as a gradual evolution of thoughts and ideas about medicine. It was rather the consequence of the revolutionary work of a few pioneers who led the way to a rational and scientific approach to medicine. One of these and, in fact, one of the greatest biologists of all time was Johannes Müller. His ceaseless investigations into far-flung and separate fields of medicine and natural science, his remarkably successful method of rational experiment and observation, and his influence as a teacher as reflected by the fame and success of his pupils have all combined to earn for him the high place which he holds in the history of medicine.

Johannes Peter Müller was born in Koblenz on July 14, 1801, the eldest of five children of a fairly prosperous shoemaker. His father died while Müller was still a boy, but his mother was able to manage her husband's business successfully with the aid of assistants, and when young Johannes began to entertain the idea of becoming a Catholic priest his mother was able to allow him to pursue his education seriously. Accordingly, he was entered in the *Sekundar Schule* in Koblenz, a former Jesuit college, in 1810, and undertook a classical education.

He acquired an excellent training in Latin and Greek and made his own translations of Plato and Aristotle, acquiring in the process a lifelong reverence for the latter's observations on natural phenomena. He also became interested in Goethe's works, especially those which concerned themselves with scientific subjects. He was an avid collector in these school days, gathering many of the species of insects in the neighborhood. After the fall of Napoleon, the Rhineland came under the Prussian government, and the curriculum of the schools became directed along more precise and scientific lines. This further channeled young Müller's studies, and by the end of his training in the *Sekundar Schule* in 1817 his inclinations were beginning to be turned away from the priesthood and more and more toward a study of natural science.

After a period of compulsory military service, en-

livened only by several humorous incidents in consequence of his ceaseless investigative spirit, he entered the University of Bonn in 1819. Upon starting at the university, he finally made his decision in favor of science over theology and began the study of medicine. He applied himself with enthusiasm to his studies, especially in anatomy and physiology, and soon became so impressed with his new fields of endeavor that he made the statement: "Whatever cannot be demonstrated by the scalpel, does not exist." It was not long his viewpoint, and was important only in that in later years opponents to his broad conclusions drawn from observed data would recall it to embarrass his position.

In 1821, the university announced that its first prize would be given for the best paper dealing with the subject of the respiration of the fetus. Müller devoted every bit of his spare time to this project, and, devising a series of experiments which brilliantly cleared questionable points, he was awarded the prize.

He received his doctorate in medicine at Bonn in 1823, and from there went to Berlin, which at that time was the Mecca of higher education in Germany. He spent a year and a half at the University of Berlin, working under the direction of Karl Rudolphi, professor of physiology. His work, dealing especially with the mechanisms of phonation, was carefully and thoughtfully carried out and when he left Berlin, Rudolphi presented him with an English microscope in appreciation for his work and that he might better continue his investigations in the future.

On returning to Bonn in October of 1824, he began lecturing in the university as a Privat-Dozent and also set up in the practice of medicine. This latter activity provided rather meager income since Bonn, a city of 30,000, already had 18 full-time medical practitioners. A few months after he had opened his practice, a friend under his care died of peritonitis, and Müller forthwith gave up all ideas of practicing medicine and devoted all of his time to teaching and research. He began at this time an extensive investigation of rather metaphysical phenomena, dealing with such things as religious visions, *déjà vu*, visual hallucinations, dreams during various stages of wake and sleep, and phenomena of the optic nerve and of vision. He published his findings in a paper with the rather formidable title, "Ueber die phantastischen Gesichterscheinerungen," in 1826.

Concurrently he was conducting a series of intro-

This is one of 11 theses, written by fourth year students at the University of Kansas School of Medicine, selected for publication by the Editorial Board from a group judged to be the best by the faculty at the school. This thesis won the \$100 D. C. Guffey prize for papers on the history of medicine, May 1954.

Dr. Fritzlen, who is now interning at Colorado General Hospital, translated the original German literature listed in the bibliography.



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spective observations, noting the effects on his mental acuity of prolonged fasting and abstinence from sleep, attempting to produce in his imagination visual impressions with all of the reality of actual sight, and acquiring voluntary control of the size of his pupils by long hours of practice before a mirror. These depleting activities and the nature of his recent metaphysical studies, treading as they did along the sometimes narrow boundary between science and philosophy, and occasionally in conflict with his staunch Catholic background, produced considerable uneasiness in his mind and in his prior convictions. One light note pierced this otherwise somber period of gloom and mysticism, and this was his acquisition of a high degree of control of the muscles of his ears and scalp, with which talent he often entertained his friends.

In 1826 he was appointed to an assistant professorship at Bonn. In 1827, though in far from robust finances, he undertook the state of matrimony, marrying one Anna Zeiler, the daughter of a local landholder, and somewhat prophetically promised her the fame of an enduring name in lieu of more material wealth. A few months after his marriage, as a consequence perhaps of the combination of family responsibility, overwork, and his recent introspection, he broke down in what amounted to an attack of neurasthenia and despaired of ever being well or worth anything again. Through the benevolence of the university he was granted a leave of absence, and he and his bride spent several leisurely months wandering up and down the Rhineland in a light carriage. From this most pleasant and relaxing departure from his ceaseless pursuit of science he was able to return to his work restored in mind and body, quite resolved to avoid in the future the philosophical speculation and introspection which he felt had contributed to his downfall.

His return to work was followed by a period of intense activity in many fields. He discovered chondrin, one of the constituents of cartilage. He confirmed and elaborated the work on spinal nerves by Bell and Prochaska, defined reflex actions, devised simple experiments to demonstrate the diverse functions of the anterior and posterior spinal nerves, and introduced these concepts into German medicine. He studied the function of the otic (Arnold's) ganglion and the glossopharyngeal nerve. He worked out much of the mechanism of production of the human voice. He made extensive studies of the functions of the various sensory nerves and demonstrated that each type of sensory nerve reacts in the same manner each time it is stimulated, no matter what the nature of the stimulus, rather than each different kind of nerve being sensitive only to special stimuli. His observations in this last matter are sufficiently complete and

accurate to be remembered to this day as "Müller's Law of specific nerve energies."^{1, 2} He worked out much of the microscopic structure of various glandular tissues, and the publication of his findings in 1830 cleared much of the controversy which had existed in this field since the days of Malpighi.

In 1830 he was promoted to the rank of ordinary professor at Bonn. Still in 1830, he published a paper entitled "Bildungsgeschichte der Genitalien" in which he described the ducts in the urogenital system of the embryo which bear his name, the Müllerian ducts. He introduced Hewson's work on fibrin and blood corpuscles into German medicine, and added to this his own work on the properties of body fluids in "Analysis of Blood, Lymph, and Chyle," published in 1832. He studied also the contractility of capillaries and the irritability of tissues and drew accurate and useful conclusions from these studies.

In the fall of 1832, Karl Rudolphi, professor of anatomy and physiology at the University of Berlin and Müller's former teacher, died, and a number of candidates competed for the vacant position. Müller, in a move unusually bold for him, wrote an open letter to the minister of Prussia declaring that he, Müller, by reason of his work and his ability, had claim to the position superior to that of any other living physiologist. Whether or not it constituted conceit, this approach was certainly successful, for the minister immediately appointed Müller to the post. Thus in the spring of 1833, at the age of 31, he occupied the chairs of anatomy and physiology of the University of Berlin, which positions he was to hold until his death in 1858.

In the last months of 1833, he completed his most famous work, *Handbuch der Physiologie des Menschen*, a two-volume text covering the entire field of physiology. It contained the most complete review of the literature of medicine and natural science since Albrecht von Haller's *Bibliotheca medica*, and many of the concepts set forth were elaborated or confirmed by Müller's own experiments and observations. It was a milepost in the turning of physiology from the speculative to the scientific and experimental method. The *Handbuch der Physiologie* soon became a standard text and reference, not only in Germany but also, through translations, in the other countries of Europe and in America. At this same time he also assumed the editorship of the journal "Archiv für Anatomie und Physiologie" upon the death of its founder and editor, John Frederick Meckel.

At Berlin, in addition to his teaching duties, Müller continued his unrelenting investigation of nature. In 1834 he collaborated with the Swiss-American paleontologist, Agassiz, in the publication of a paper on the comparison of the vertebrae of fossil and living dogfish. In 1834 also he published "Ver-


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gleichende Anatomie der Myxinoiden," a classic monograph on the comparative anatomy of the cyclostomata, the lampreys and eels. He became interested in tumors through his studies of enchondromata, and his paper on the subject in 1838 was one of the earliest accurate discussions of the nature and anatomy of tumors. He described psorospermiosis, a parasitic disease of animals, and called attention to the possibility of it occurring in humans also.

As the years passed, Müller became more and more interested in comparative anatomy and studied especially lower forms of marine animals. Toward this purpose, he began to spend his summer vacations along the seacoasts of Europe. The course of his travels incident to observing and gathering marine specimens would have been sufficient to establish him as an authority on the resorts as well as the marine life of all of Europe.

In 1841 he went to Sweden where, with Retzius, he extensively studied *Amphioxus*, the most primitive chordate and the acquaintance of every biology student today. The year 1842 found him in Naples, noting also the marine fauna about the isle of Capri; 1845 found him on the German island of Helgoland in the Baltic Sea. After these last two trips he completed and published his observations describing the alternation of generations in the coelenterates and the metamorphoses of starfishes.

The year 1847 was spent at Helsinki and 1849 in and about Nice and along the southern coast of France. The summers of 1850, 1851, and 1852 were spent at Trieste. Messina was his port of call in 1853, and a second Helgoland summer was passed in 1854. In 1855 Müller traveled and worked along the west coast of Norway and ran across some high adventure when, in early September, he narrowly escaped death when the trawler on which he was working collided with another vessel. He was again at Nice in 1856, and 1857 was spent at St. Tropez on the north coast of Germany. He supplemented these studies with work on fossils gathered from several German quarries. His discoveries, while not always earth-shaking in their portent, were important contributions to the understanding of fossil and living forms of lower marine animals and were noteworthy for the accuracy and completeness of the method in which they were carried out.

In spite of all of this, it is not for his own work that Müller is most famous, but rather because of the work of the men who were his pupils. The roll of his students is almost a recital of the leadership of German medicine and science in the middle of the 19th century: Virchow, the father of cellular pathology; Schwann, who enunciated the cell doctrine; Helmholtz, the physician-physicist who declared the principles of conservation of energy; Remak, Lieber-

kühn, Henle, Reichert, Troschel, Bruecke, Du Bois-Reymond, as well as other able, though less renowned, men of German science.

Such professorial success might be ascribed to mere chance in occupying an important teaching post when brilliant men happened along. This does not seem to be the case, however, as Müller's pupils without exception gave a large share of the credit for their success to their early training under their respected teacher. It appears, then, that Müller had some real ability in the matter of training young men to think, to work, and to investigate with a method which would bear real results.

He used the blackboard extensively to diagram each successive point in developing a given subject. His lectures were clear, concise, and stimulating to the interested and talented student, consisting as they did almost wholly of fact upon fact toward a given point, rather than being embellished by flamboyance, dramatics, or wit to make them entertaining to most university students. He was able to ferret out gifted students and to develop their talents by giving them tasks, making them learn to think and to work, and encouraging them in promising fields of investigation.

Helmholtz, for instance, was anxious to complete his medical education as quickly as possible because of financial difficulties at home. Müller was able to persuade him to remain for an extra year in order to complete a project in physiology which he had begun and offered the use of his own laboratory and equipment that this might better be done.

At Müller's invitation, Schwann accepted an assistant's post in the department of anatomy for a pitance salary of 10 thalers a month and was able to continue his investigation into the microscopical structure of tissues begun in his student days. This bore fruit in the enunciation a few years later of the cell doctrine in the monograph "Microscopical Researches in the Accordance in Structure and Growth of Plants and Animals."

Müller was the authority on the nature and development of tumors to whom young Virchow turned for advice and direction, and it was Müller's study of microcephalic skulls which started Virchow on his work in craniology and later in anthropology. Lieberkühn followed directly in his teacher's footsteps when he demonstrated psorospermiosis to definitely be a parasitic disease of humans.

To the best of his students Müller was a close personal friend, always prepared to lend them encouragement, advice, or assistance as needed. It was at the suggestion of his students that he took up ice skating at the age of 45, and he was even known to race a student from one door to the next in a corridor when he was past 50. Many a joke and anecdote from

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him found its way about the laboratories of his department, ample evidence that his sense of humor had not abandoned him in his maturity.

What the spirit of this man might be, that he could guide and train the great scientific minds of half a century in his country, might well be investigated with profit. His had to be a method of science, to observe and to investigate the phenomena of nature in an objective and successful manner. He could almost sense the workings of things by observing them, suggesting, for instance, many years before the myenteric plexuses were demonstrated, that there must be a separate nervous system for the intestinal tract. His experiments were designed to throw light on structures and functions, and he accepted the results he obtained for what they were with an open and receptive mind.

He was a vitalist, in that he concluded that a vital force was an absolute explanation for vital phenomena, independent of any observable chemical or physical properties. The very essence of his approach to science is contained in the following passage from his *Handbuch der Physiologie* concerning the origin of organic matter and the organic force: "How organic beings were originally produced, and how organic matter became endowed with a force which is absolutely necessary to the formation and preservation of this organic matter, but which is manifested only in it, it is beyond the compass and knowledge of our experience to determine. The difficulty is not removed by saying that the organic force has resided in the organic matter from eternity, as if organic force and organic matter were only different ways of regarding the same object; for, in fact, the organic phenomena are presented only by a certain combination of the elements; and even organic matter, itself susceptible of life, is reduced to inorganic compounds as soon as the cause of the vital phenomena, namely, the vital force, ceases to exist. This problem, however, is not a subject of experimental physiology, but of philosophy. Conviction in philosophy and in natural science has entirely different bases; the first suggestion here, therefore, is not to be led away from the field of rational experiment. We must be content to know that the forces which give life to organic bodies are peculiar, and then to examine more closely their properties."³

For some months before his death Müller was in somewhat failing health, apparently as a result of arteriosclerosis, and he had even prepared to give up his teaching post. However, his death was rather unexpected when he passed away in his sleep on April 28, 1858, after a prior day of full activity and reasonably good health.

He had been honored during his lifetime as had few other scientists, being elected to active or honor-

ary memberships in more than 60 scientific and medical societies in Europe and America. On him had also been conferred various orders of knighthood by the kings of Bavaria, Sweden, Prussia, and Sardinia. The occasion of his funeral called forth the great men of science in all of Europe, and Rudolph Virchow delivered the eulogy. Müller had been staunch in his Catholic faith for many years, and he was buried with all of the formal rites of the church.

Since his death and to the present time, his memory is venerated by men of science, especially in Germany where scarcely a medical meeting proceeds without an invocation of the name of Johannes Müller, the father and patron of scientific medicine. Though his accomplishments have often been recalled and his memory hallowed, there is perhaps nowhere so apt an epitomization of Müller as that contained in Virchow's eulogy at Müller's funeral, which follows below.

"How can one tongue adequately praise a man who presided over the whole domain of the science of natural life? . . . Is it possible in a few short minutes to sketch the history of a conqueror who, in restless campaigns, through more than one generation, only made use of each new victory as a standpoint whereon he might set his feet and boldly look out for fresh triumphs? . . . We have to inquire what it was that raised Müller to so high a place in the estimation of his contemporaries; by what magic it was that envy became dumb before him and by what mysterious means he contrived to enchain to himself the hearts of beginners and to keep them captive through many long years? . . . Müller vanquished mysticism and phantasms in the organic kingdom and he was most distinctly opposed to every dangerous tendency, whether it was pursued under the pretext of physiology or belief, or merely in accordance with conjectures. Müller did not discover, but he firmly established the exact method of investigating natural sciences. Hence, he did not found a school in the sense of dogmas—for he taught none, but only in the sense of methods. The school of natural science which Müller created knew no community of doctrine, but only of facts and still more of methods."⁴

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ANNOUNCEMENTS

The seventh annual meeting of the International Academy of Proctology will be held in New York City, March 23-26. Panel discussions will highlight scientific sessions at the Hotel Plaza in New York City on March 23, 25, and 26, and at the Jersey City Medical Center on March 24.

The 28th annual spring congress of the Gill Memorial Eye, Ear, and Throat Hospital, Roanoke, Virginia, will be held April 4-9. Information may be secured from the hospital, 711 South Jefferson Street, Roanoke, Virginia.

The next scheduled examinations (Part II), oral and clinical, for all candidates of the American Board of Obstetrics and Gynecology will be conducted at the Edgewater Beach Hotel, Chicago, May 12-28, 1955. Formal notice of the exact time of each candidate's examination will be sent in advance. Candidates who participated in the Part I examinations are notified that case abstracts must be in the office of the secretary of the board no later than February 28.

The American Hospital Association announces that National Hospital Week will be observed from May 8 through 14, 1955. The theme of the observance this year is "Your Hospital . . . A Tradition of Service."

The American Congress of Physical Medicine and Rehabilitation announces that June 1 will be the closing date for entries in its annual essay contest. Contributions may be on any subject relating to physical medicine or rehabilitation. Medical students, interns, and residents are eligible to participate. The address to be used is 30 North Michigan Avenue, Chicago 2, Illinois.

A scholarship contest in which winners will receive prizes of \$1,000 and \$750 and three-months scholarships has been announced by the Foundation of the American Society of Plastic and Reconstructive Surgery, Inc., 30 Central Park South, New York 19, N. Y. For the junior classification, contestants must be residents or those who have been in the practice of plastic surgery no longer than five years. For the senior classification, five or more years of practice in the specialty is a requirement. Closing date for entries is July 1, 1955.

A short intensive course on the laboratory diagnosis and pathology of parasitic infections will be presented at the Louisiana State University School of Medicine, New Orleans, August 15-27, 1955. Although designed primarily for pathologists and technologists, the course will also be of interest to general practitioners, pediatricians, internists, etc. A limited number may attend, and a fee of \$50 will be charged. Complete information may be secured from Dr. Clyde Swartzwelder, Department of Microbiology, School of Medicine, 1542 Tulane Avenue, New Orleans 12, Louisiana.

The 33rd annual scientific and clinical session of the American Congress of Physical Medicine and Rehabilitation will be held August 28-September 2, inclusive, at the Hotel Statler, Detroit. Programs may be secured from the Congress, 30 North Michigan Avenue, Chicago 2, Illinois.

THE KANSAS PRESS LOOKS AT MEDICINE

Editor's Note. In this section the JOURNAL reproduces editorials relating to medicine which have appeared in the lay press. An effort is made to include both favorable and unfavorable comments, and the Editorial Board in no instance assumes responsibility for the opinions expressed.

DOCTORS' DREAM CAR

Surgeons in symposium in Atlantic City this week were in agreement that humans enclosed in present motor cars are as vulnerable to injury as a teacup shipped loose in a barrel. They had specific design improvements to suggest, moreover, which would reduce the highway death toll—which now runs in excess of 30,000 a year—by from 50 to 80 per cent.

The doctors' dream car would have seats which were a part of the frame. Retractable seat belts. A steering column which telescoped downward under impact. Doors that couldn't fly open. A four-inch thick crash panel of foam material over the dashboard. No projecting instruments, such as rear-view mirrors. A 2½-foot thick front nose, made of aluminum foam or something like that, which would absorb shock by crumpling slowly in event of crash.

This dream car, however, is not likely to make an early appearance on the road, and neither is any noticeable reduction in the number of highway accident fatalities to be expected soon from the surgeons' most practical suggestions.

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desire to create sales and not safety. Detroit would not take kindly to exterior rear-view mirrors which destroyed the illusion of streamlining, or to a thick foam rubber cover for much of the shiny chrome.

Motorist resistance to these reforms would be as great as the industry's. Parents of children dread the thought of the added chore of unstrapping the children at every rest-room pause. Nonparents continue unshaken in their delusion that they are the most careful of drivers and that while the crash death rate is horrifying, it is always somebody else who gets killed.

Despite that, the professional men deserve a round of applause for trying. Perhaps they have tossed up some ideas which through the years will sink in.

The day may come when the typical driver will habitually buckle his belt before he steps on the starter, and will demand the substitution of three feet of purposeless overhang in the back for a like space of shock cushion up front.—*Chanute Tribune*, November 20, 1954.

NEW SPECIALTY GROUP FORMED

The American College of Angiology announces its organization as a scientific body dedicated to the teaching and dissemination of knowledge concerned with the science and practice of angiology and to research on the subject. The growing complexity and increasing incidence of diseases of the blood vessels prompted formation of the group.

The first annual meeting will be held at Atlantic City on June 4, 1955, and will include a scientific program. The organization will also function as a specialty board for the certification of qualified physicians and surgeons and will establish residencies in angiology in qualified hospitals and medical institutions.

The official journal of the college will be *Angiology*, published by the Williams and Wilkins Company, Baltimore.

COMMITTEE ON TOXICOLOGY

A new A.M.A. group, a Committee on Toxicology, is now studying ways of stopping accidental poisonings through misuse of common household chemicals such as drugs, cosmetics, cleaning fluids, and paints.

The committee has collaborated with various national organizations interested in these problems, is offering advice for the standardization of safe coatings for children's toys and furniture, has suggested provisions for the labeling of lead paints, and has participated in the revision of publications on the subject.

BOOK REVIEWS

Review of Medical Microbiology. By Ernest Jawetz, Joseph L. Melnick, and Edward A. Adelberg. Published by Lange Medical Publications, Los Altos, California. 360 pages. Price \$4.50.

The authors specify in their preface of the *Review* that they intended to prepare a brief as well as accurate presentation of medical aspects of microbiology. This they have accomplished.

Each disease is discussed in a similar manner. First the etiologic agent and its most important characteristics are discussed. This is followed by a short discussion of pathogenesis, pathology, and clinical findings. Then the authors discuss diagnostic techniques, epidemiology, and treatment.

Many new developments have occurred in fields related to medical microbiology. To help the reader understand these developments the authors devote a large portion of the book to a presentation of fundamental principles.

There is approximately equal coverage for each of the following aspects of microbiology: (1) basic principles, (2) bacterial and mycotic infections, and (3) rickettsial and viral infections. Blood group substances, on the other hand, are inadequately discussed, and the field of parasitology is barely mentioned.

This *Review* can be recommended especially to house officers and practicing physicians who may find it necessary to obtain quickly a clear and concise discussion concerning most aspects of medical microbiology.—A.W.

Fluid and Electrolytes in Practice. By Harry Statland. Published by J. B. Lippincott Company, Philadelphia. 206 pages. Price \$5.00.

Many physicians in Kansas and Missouri have heard Dr. Statland's presentations on fluid and electrolyte balance on the University of Kansas circuit courses. These lectures have been considerably enlarged and are now presented in book form. The first portion of the book covers the basic principles of fluid and electrolyte movement and the second part discusses the management of fluid and electrolyte balance in specific disease conditions. Many readable fluid and electrolyte texts are now available, and Dr. Statland's volume is one of the best. It is designed specifically for the physician in general practice who meets many of the problems he discusses. We very much enjoyed Dr. Statland's book.—W.L.V.

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Current Concepts in Digitalis Therapy. By Bernard Lown and Samuel A. Levine. Published by Little, Brown and Company, Boston. 164 pages. Price \$3.50.

"The use of digitalis marks the beginning of the modern era of cardiac therapy." With this introductory statement the authors begin a thorough presentation of "The Action and Clinical Use of Digitalis," "Digitalis Intoxication," "Electrolytes and Digitalis," "Relation of Potassium to Digitalis Intoxication," "Paroxysmal Atrial Tachycardia with Block," "A Digitalis Tolerance Test," and, finally, concluding remarks.

The material presented is pertinent, complete, and supplemented with an extensive bibliography. Often the presentation is less than clear, making reading difficult. In spite of this very real weakness, this is a splendid volume. Every medical student and every clinician observing the effects of and using digitalis should study this book. No textbook of pharmacology, cardiology, or medicine presently offers such an authoritative discussion.—M.H.D.

Thoracic Surgery. Second Edition. By Richard H. Sweet. Published by W. B. Saunders Company, Philadelphia. 381 pages, 159 illustrations. Price \$10.

This is the second edition of a book well-received and much-needed at the time of its first appearance four years ago. The author in his original preface states, "The present volume is based upon the concept that any properly qualified surgeon can acquire with relative ease a satisfactory proficiency in thoracic surgery by applying the technics herein described." Accordingly, he devotes himself to the problems of operative technic in thoracic surgery, the variations of these technics to suit different pathological processes, and postoperative care. As a valuable adjunct specific chapters are devoted to the surgical anatomy of the thorax and general technical considerations, such as anesthesia and particular thoracic incisions. A chapter is devoted to the various instruments employed in thoracic surgery.

Little space is devoted to the indications or the results of thoracic operations, attention being constantly maintained toward operative details. It is a tribute to the author that in this rapidly advancing field his selection of material has proved to be

practical. His lengthy experience extending over many years with intrathoracic procedures lends judgment to his comments regarding various technics.

In regard to operations on the heart he states: "No useful purpose would be accomplished by an effort to describe and illustrate all the operations which have been proposed or tried; therefore, only those which should have an established value will be described. Those whose value remains uncertain or whose technic is still in the early phases of development will merely be mentioned." The various disorders of the heart for which surgical procedures have been suggested are arranged according to classification of "established procedures and unestablished procedures."

Throughout, the illustrations are numerous and of unusual excellence. The content of the book is arranged in a logical order, and the operative steps of each procedure are well described.

Although this book represents to a large extent the personal opinions of the author and contains no bibliography, this is in no sense a criticism because of the well-deserved position that the author has as a leader in the field of thoracic surgery. This book will be welcomed by those surgeons interested in thoracic surgery and should be considered almost a necessity for those receiving surgical training in thoracic surgery.—C.F.K.

The Medical Staff in the Hospital. Second Edition. By Thomas R. Ponton, revised by Malcolm T. MacEachern. Published by Physicians' Record Company, Chicago. 373 pages. Price \$7.25.

This authoritative book is concerned with a subject which physicians as a rule are apt to consider uninteresting, and yet there is within it something which it would be well for every doctor of medicine to read. Not every physician will be concerned with the entire book, but there is some part which does concern him. Included are discussions of the obligations, responsibilities, and privileges of staff membership, together with relationships between medical staff and administration.

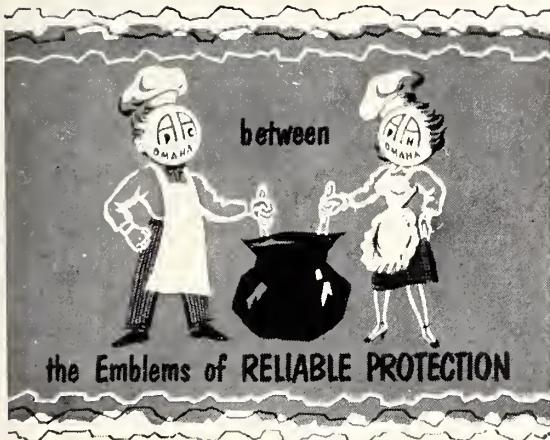
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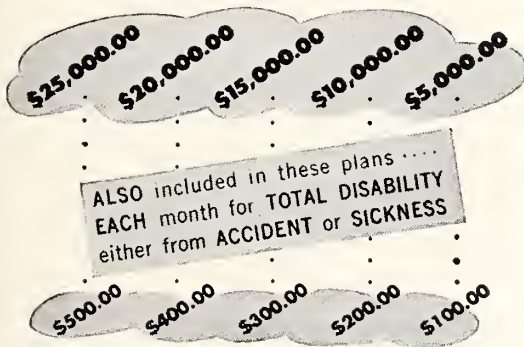
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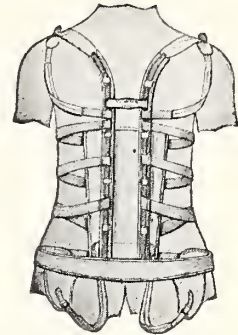
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The book also includes chapters detailing the requirements for the hospitals to obtain approval for internships and residencies, and the minimum standards for accreditation as formulated by the Joint Commission on Accreditation, which has assumed the responsibility for all hospital accreditation in the United States and Canada.

Certainly every hospital which is worthy of the name should have one of these volumes available for staff members to consult, and many physicians will find it a useful volume for their own libraries.—O.R.C.

Reproductive System. Volume 2 of The Ciba Collection of Medical Illustrations. By Frank H. Netter. Commissioned and published by Ciba Pharmaceutical Products, Inc., Summit, New Jersey. 302 pages. Price (sold at cost) \$13.

A few years ago Ciba Pharmaceutical Products, Inc., undertook to publish a series of books collectively titled "The Ciba Collection of Medical Illustrations." The first volume—*The Nervous System*—was published some time ago, and recently the second volume—*The Reproductive System*—was released. The book is of 302 pages, 9½ by 12 inches, and in the same format as Volume I.

Profusely illustrated with 233 plates of the superb work of Frank H. Netter, M.D., and with excellent explanatory texts, the book illustrates both normal and pathologic anatomy of the reproductive systems

of both male and female. It is a fitting companion for the earlier volume and will undoubtedly reach its deserved place in many medical libraries, both public and private.—O.R.C.

SCREENING FOR VISUAL DEFECTS

"Screening School Children for Visual Defects" is the title of a new pamphlet issued by the Children's Bureau, U. S. Department of Health, Education, and Welfare. It outlines simple principles for increasing the accuracy of measurements now used for testing the vision of school children.

The information presented is based on a study of seven different procedures used in the public schools of St. Louis, showing the degree to which results of each procedure corresponded with an ophthalmologist's clinical findings. The study was made with the support of the National Society for the Prevention of Blindness, the Missouri State Department of Public Health and Welfare, the Children's Bureau, the Department of Ophthalmology of Washington University School of Medicine, and the Office of Naval Research.

Copies of the pamphlet may be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., for 35 cents.

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*Pratt, R., & Dufrenoy, J.: Texas Rep. Biol. & Med. 12:145, 1954.



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Volume LVI

MARCH, 1955

No. 3

Hepatic Coma, a Review of Twenty-Seven Cases

Charles Andrews, M.D., Mahlon Delp, M.D., and
Mary Jane Elliott, R.N.

Kansas City, Kansas

Hepatic coma is a syndrome frequently associated with severe hepatic insufficiency and characterized by central nervous system dysfunction that progresses to coma. Classically the clinical picture includes delirium, flapping tremor, distinctive moaning cry, and signs and symptoms of liver failure depending upon the type of underlying hepatic disorder. Recently considerable progress has been made in elucidating the factors involved in the pathogenesis of this syndrome. In order to evaluate our experience in light of this new knowledge, we have reviewed 27 cases of hepatic coma observed in the University of Kansas Medical Center.

METHODS

All the charts carrying the diagnosis of hepatic or biliary tract disease between the dates January, 1947, to March, 1954, were reviewed. The following criteria were used to make the diagnosis of hepatic coma: (1) the presence of coma associated with delirium, flapping tremor, fetor hepaticus, or other signs and symptoms usually associated with hepatic coma; (2) the presence of primary or secondary liver disease; and (3) the absence of any other disease that would adequately explain the coma.

Undoubtedly, some cases of hepatic coma were not included. It is difficult to determine the cause of coma in patients after massive hematemesis has occurred or with malignant tumors which have spread to the

liver and other organs. If there was reasonable doubt as to the diagnosis, the case was not included. Twenty-seven cases were found suitable for review.

RESULTS

The diagnosis of the underlying liver disease in each case is listed in Table I. Post-mortem examination was done in 21 cases and liver biopsy in two others. In the remaining four patients the diagnosis was made on the following evidence.

TABLE I
DIAGNOSIS AS TO UNDERLYING LIVER DISEASE

Diagnosis	Males	Females	Total
Diffuse hepatic fibrosis	6	7	13
Post necrotic cirrhosis	1	2	3
Infectious hepatitis with massive hepatic necrosis	0	3	3
Diffuse hepatic fibrosis follow- ing infectious hepatitis	3	0	3
Biliary cirrhosis	1	2	3
Homologous serum hepatitis	0	1	1
Replacement of liver by tumor	1	0	1

Patient PD had a six-week history of malaise and fever. Jaundice, ankle edema, ascites, and hepatomegaly developed rapidly. After receiving ammonium chloride as a diuretic, she became comatose, and six days later she expired. A diagnosis of infectious hepatitis with massive hepatic necrosis and hepatic coma was made.

Patient CW had a ten-year history of alcoholism, and a diagnosis of cirrhosis had been made one year previously. Three days prior to admission she became irrational and was admitted in coma. Jaundice, ascites,

Dr. Andrews is a resident in medicine at the University of Kansas Medical Center. Dr. Delp is professor of medicine at the University of Kansas Medical Center, and Miss Elliott is administrative medical supervisor at the University of Kansas Medical Center.

dilated abdominal veins, hepatomegaly, and abnormal liver function tests were present. She expired seven days later still in coma.

Patient EY was an alcoholic in whom a diagnosis of cirrhosis had been made two years previously. Vomiting and confusion had preceded her admission to the hospital in coma.

Patient ZM had a history of receiving three blood transfusions four months prior to admission. She developed anorexia and jaundice one week before coming to the hospital. She rapidly became incoherent and comatose. On admission she had a large tender liver and was deeply jaundiced. She expired one day later. A diagnosis of hemologous serum jaundice with massive hepatic necrosis and hepatic coma was made.

Diffuse hepatic fibrosis (cirrhosis) was present in half the patients. This finding was not unexpected since this disorder is probably the most frequent type of chronic liver disease.

In the one 15-year-old male with Hodgkin's disease, extensive replacement of liver tissue ended in a terminal picture of hepatic coma.

Data as to sex, race, and age were summarized as follows: Neither sex predominated greatly in this series, there being 15 females and 12 males. Twenty-two patients were Caucasian and five were Negro. This roughly represents the ratio of admission of the two races to this hospital. The youngest patient was eight and the oldest 67. Four patients were in the third decade, eight in the fourth, seven in the fifth, and four in the sixth. The remaining four patients were in the first or second decade.

TABLE II
PRE-COMA SYMPTOMS AND SIGNS

<i>Symptom or Sign</i>	<i>Number of patients in whom present</i>
Delirium	20
Moaning or peculiar cry	14
Flapping tremor	11
Lethargy and weakness	8
Fetor hepaticus	8
Restlessness and apprehension	5

Table II lists the variable symptoms and signs most frequently observed just prior to the onset of coma. Twenty of the 27 patients were irrational and confused, while 14 had the peculiar moaning cry often associated with hepatic coma.

Table III lists the most frequent physical findings. All were jaundiced at the onset of coma. Table IV summarizes the neurological signs present during coma. The temperature of these patients varied considerably. Three patients had no fever, while 24 had a temperature above 99 degrees. Six of the latter had a temperature above 104 degrees.

Tables V and VI list laboratory data. Nonprotein

TABLE III
PHYSICAL SIGNS

<i>Physical Sign</i>	<i>Present</i>	<i>Absent</i>	<i>Not Noted</i>
Jaundice	27	0	0
Hepatomegaly	25	2	0
Ascites	18	9	0
Evidence of collateral circulation ..	18	7	2
Splenomegaly	11	16	0
Spider nevi	9	8	10
Liver palms	9	3	15

nitrogen values above 35 mg. per cent were noted in 15. In no instance was there other clinical or pathological evidence suggestive of primary renal disease. In nine patients the CO₂ combining power was below 20 milli-equivalents per liter. Six of these patients also had serum sodium values below 130 milli-equivalents per liter. As coma progressed the serum sodium tended to drop even more. In 12 instances the serum potassium was below five milli-equivalents per liter. With one exception those patients with electrolyte disturbances had ascites. In 19 patients there were no electrolyte abnormalities. Liver function studies showed no consistent pattern. In general the tests showing hepatocellular dysfunction were markedly abnormal.

Of considerable interest were those patients in whom a precipitating factor for the coma could be determined. Table VII summarizes these factors.

Obviously, all patients in this group represent treatment failures. The usual therapy included a diet high in protein, high in carbohydrate, and with moderate fat. Other items such as liver extract, intravenous glucose and electrolytes, parenteral vitamins, and antibiotics as indicated were given. Steroid therapy in the form of ACTH, cortisone, or adrenal cortical extract was used in 15 patients. Several of the latter were moribund at the time these drugs were given. Two of the three patients who survived more than one episode of coma (Table VIII) received steroids, and it was felt that these drugs contributed to their recovery. Both, however, later succumbed to complications of their disease.

DISCUSSION

Our data as to symptoms, signs, and laboratory findings are essentially the same as those in other reports.^{1, 5} The development of confusion, lethargy,

TABLE IV
NEUROLOGICAL SIGNS DURING COMA

<i>Neurological Sign</i>	<i>Number of patients in whom present</i>
Normal reflexes	14
Babinski	6
Hypoactive reflexes	5
Absent reflexes	2
Hyperactive reflexes	2
Nystagmus	1
Convulsions	1

TABLE V
HEMOGLOBIN, WBC. AND LIVER FUNCTION STUDIES*

Case	Hgb. Gms.	WBC	SB D	SB T	AP	UU	FU	PT	Brom.	CC	TT	CE	SA	SG	SI	TC
HF	14.0	6,150	0.7	4.0	2.5	19.8	820	28%		4	18	40%	2.5	3.0	220	175
EA	8.4	6,900	0.8	1.5	5.0	0.7		78%		4	22	50%	4.5	3.5		146
HJ	12.0	3,850	12.0	24	3.0	1	200	48%		4	28	30%	2.5	4	140	200
FR	9.8	5,050		12	33.6		4	29%		4		36%	2.0	4.0		250
HB	14.2	4,350	4.0	7	12.2			55%		1	4	6%	3.0	2.0	45	175
MB	10.7	26,650	5.0	10	10		133	33%		2	10	20%	2.0	3.0		250
TL	11.8	16,600	2.0	5	2.0	0.9		20%		4	20	40%	3.3	3.0	135	200
MMc	13.8	13,600	14.2	36	8.0	4		10%		4	20	30%	3.0	3.0	225	150
CG	8.0	6,250	11.8	19.4	8.0			30%		2	0	10%	2.5	0.3	381	43
EA	12.0	29,650	3.0	16	5			15%		3	9	10%	3.5	3.0	170	100
EY	11.3	2,950		12		0	100	10%	85%	4	53	40%	1.0	6.5		100
AC	10.9	10,650	12	16	10	2		14%		3	16	10%	3.5	2.0	56	200
EW	3.4	14,200	8.6	16	2.0					4	10	10%	2.5	3.0		100
PD	11.8	11,550	8.6	14	2.5	3.0		20%		4	20	20%	2.5	3.5	156	100
KS	9.5	4,700		17.5	24	0.3		38%	5%	1	14	40%	1.0	3.5		200
PK	13	6,900	6.8	14		6.0	75	80%	100%	2	24	30%	1.37	3.23		200
IT	12.6	10,200	2	3.5	2.0			10%		4	49	30%	2.0	4.5	70	150
FY	11.4	6,600	15	24	3			12%	20%	4	60	20%	2.5	4.5		175
LTi	11.4	5,600	4	4	10			30%	20%	4	12	50%	3.5	3.5		150
JN	11.7	4,750	1.5			4.0	150	30%	65%	4	18	40%	2.0	3.0		98
CB	8.0	10,450	3.0			17.8	40	40%		3	8	50%	2.0	2.5		250
CW	6.0	21,500	1.0	8.2						1	5	50%	1.8	2.6		212
WS	12.3	8,600		2.0				48%	10%	3	7		3.5	2.0		168
WR	9.0	9,200		14						3	5	20%	1.5	3.0		
ZM	13.0	26,000														
NS								18%					2.3	3.2		

* Key to abbreviations of tests:

SB-D Direct serum bilirubin in mgm./100 cc.
SB-T Total bilirubin in mgm./100 cc.
AP Alkaline phosphatase in Millimol units
UU Urine urobilinogen in units in a two hour urine sample
FU Feces urobilinogen in mgm. per 24 hours
PT Prothrombin in per cent of normal

Brom. Bromsulphthalein, 5 mgm. per kilo, in per cent retained
CC Cephalin cholesterol, 0 to 4+
TT Thymol turbidity in units
CE Cholesterol esters in per cent
SA Serum albumin in gm./100 cc.
SG Serum globulin in gm./100 cc.
SI Serum iron in gamma per cent
TC Total serum cholesterol in mgm./100 cc.

flapping tremor, or fetor hepaticus formed the most helpful symptoms and signs in predicting that coma was imminent. Biochemical liver function studies were not helpful in predicting the onset of coma or its outcome.

The importance of ammonia in the pathogenesis of hepatic coma has recently been emphasized. Actually, this relationship was suspected by Matthews in 1922, when he noted coma in Eck fistula dogs after

they had been fed high protein diets.⁶ Elevated blood ammonia values in both cirrhosis and hepatic coma have been noted by several investigators;^{7, 10} how-

TABLE VII
FACTORS PRECIPITATING COMA

Patient	Precipitating factor	Amount of drug taken	Time Interval between factor and coma
WS	Ammonium Chloride	11 Gms. over 4 days	3 days
CB	Ammonium Chloride	10 Gms. over 4 days	2nd day of drug
PD	Ammonium Chloride	20 Gms. over 8 days	On 9th day
EA	Amigen	1000 over 4 days	Coma on 4th day
TL	Aminosol	4000	Coma 2nd day
	Resodol	30 Gms. for 2 days	Coma 4th day
HF	Diamox	45 Gms. over 4 days	Coma next day
MB	Seconal	250 mgm. one dose	Coma 6 hours after 2nd dose
FY	Demerol	50 mgm.	Irritable before drug. Coma 1 hour later
NS	Nembutal	90 mgm.	5 hours after drug
EY	Paracentesis		Irrational when done. Coma 2 hours later

TABLE VIII
PATIENTS WHO SURVIVED MORE THAN ONE EPISODE OF COMA

Patient	1st episode	Time in Coma 2nd episode	3rd episode	Final outcome
LT	4 days	5 days	...	Death 2nd episode
JN	4 days	8 days	2 days	Death 3rd episode
TL	2 days	2 days	...	Death weeks later from pulmonary emboli

ever, the amount of ammonia in the blood does not correlate well with the severity of the neurological symptoms.

The liver is the most important single organ concerned with protein metabolism, as illustrated by its recognized responsibility for formation and deamination of most amino acids. Ammonia from the latter reaction is converted to urea by the liver. It is postulated that in severe liver disease there is a breakdown in this mechanism with accumulation of ammonia in the blood. The toxic ammonia then produces hepatic coma through its effect on the central nervous system.

Walshe theorized that an abnormality of glutamic acid metabolism is responsible for the neurological changes recognized as hepatic coma.⁷

Glutamic acid is unique as the only amino acid supporting cellular respiration in the brain. It is also the one substance having the ability to detoxify and prevent accumulation of ammonia within the brain. Glutamine, the end product of this reaction, was found by Walshe to be present in abnormally high concentrations in the spinal fluid of patients in hepatic coma. A further finding of interest is that sulphoxide will inhibit glutamic acid metabolism in bacteria. Walshe also found elevated levels of this compound in two of his patients with hepatic coma. Thus, even though the exact mechanism is not clear, it seems certain that an increased amount of blood ammonia is in some way related to the pathogenesis of hepatic coma.

Several clinical studies support the above thesis. Gabuzda¹¹ and Phillips¹² reported the syndrome of impending hepatic coma in patients with cirrhosis who were given exchange resins. Since these resins exchange ammonia for sodium, it was felt they led to an elevated blood ammonia. McDermott and Adams¹³ reported a patient in whom an Eck fistula had been produced during surgery for carcinoma of the pancreas. Typical symptoms of impending hepatic coma could be produced by feeding the patient a high protein diet, urea, ammonium chloride, or exchange resins. Electroencephalographic changes similar to those previously noted in patients with hepatic coma were also recorded in this patient during the episodes of precoma. Traeger⁹ fed four patients with cirrhosis ammonium chloride and noted that the blood ammonia was elevated to a higher level and for a longer time than in four normals given the same dose of the drug.

Our experience with ammonia-containing compounds as a precipitating factor in hepatic coma is summarized in Table VII. It was felt that ammonium chloride administration led to hepatic coma in three instances (WS, CB, and PD). One patient, (EA) who had had a portal caval anastomosis, received amino acid preparations intravenously following sur-

gery. His postoperative course had been relatively uneventful until that time. On the fourth day of Aminosol he developed typical hepatic coma and expired shortly thereafter. One patient (TL) had two episodes of coma precipitated by an exchange resin. He recovered from both episodes only to expire later of pulmonary emboli. Of special interest is patient HF who had typical diffuse hepatic fibrosis with ascites. His course was uneventful until he received Diamox as a diuretic. Within 24 hours he had developed hepatic coma from which he did not recover.

We have observed two other patients with cirrhosis who became confused and lethargic but did not develop true coma after receiving this drug. Diamox blocks carbonic anhydrase in the kidney, and hydrogen ions necessary for the conversion of ammonia to the ionic form are not produced. Without this conversion the ammonia produced by the kidney to conserve base is not excreted in the urine but is absorbed into the blood. In patients with severe liver damage, toxic levels are soon reached.

Gastrointestinal bleeding has been recognized as often precipitating hepatic coma.^{1, 3} Sixteen of our patients had hematemesis or tarry stools at some time during their course. Fifteen of these had hemoglobin values below 12 grams. Because the liver is so dependent upon the portal flow for its oxygen supply, bleeding episodes resulting in disproportionate reduction in portal over systemic flow may easily insult seriously and impair the already damaged liver parenchyma. Coma may intervene under such circumstances.

Paracentesis for relief from ascites in liver disease has so frequently been followed shortly by hepatic coma that it has also been reported as a contributing factor in the pathogenesis. Evaluation of this matter requires inquiry into the cause of ascites in patients with chronic liver disease. At least three factors are pertinent: (1) increased portal pressure, (2) lowered plasma osmotic pressure secondary to decreased albumin concentration, and (3) a tendency to retention of sodium and water due perhaps to a derangement of hormones that control water and electrolyte balance.

Prentice,¹⁵ by means of tritium studies, showed that 40 to 80 per cent of the ascitic fluid passes back and forth into the circulation every hour. Since ascitic fluid contains a slightly higher concentration of sodium chloride and a slightly lower concentration of potassium and albumin as compared with serum, the removal of several liters may produce a profound disturbance of water and electrolyte balance.¹⁴ Serious changes in blood and plasma volumes may further impair the function of already damaged liver cells. Coma may be produced or worsened. In one of our patients (MB), paracentesis probably precipitated

coma, and in one (EY) made already existing coma much worse.

Patients with severe liver disease are unable to detoxify opiates and barbiturates. In three of our patients (MB, FY, NS), such agents seem implicated in the coma.

Treatment of the patient in hepatic coma is discouraging. The usual therapy of chronic liver disease, diet, vitamins, liver extract, and intravenous glucose is necessary. Protein in the diet should probably not exceed two grams per kilogram per day. The value of steroids in therapy of hepatic coma has not been determined. We feel that these drugs are indicated since they seemed to be of some benefit in a few of our patients to whom they were given during the period of confusion before the onset of deep coma. Of greatest importance is the avoidance of compounds containing ammonia or those that will increase the body ammonia such as acetazolamide, cation exchange resins, and amino acid preparations. Paracentesis should be done with extreme caution and with the removal of not more than one or two liters of fluid. Careful attention should be directed to the serum electrolytes. Occasionally it is necessary to administer hypertonic salt solution to correct a hyponatremia. Supplemental potassium is practically always necessary. The hemoglobin should be kept as near normal as possible by means of blood transfusions. Antacids and slight elevation of the patient's head are sometimes helpful in preventing bleeding from esophageal varices. Recently Walshe and others^{16, 17} have reported successful use of intravenous sodium glutamate in hepatic coma. If our present concepts as to the pathogenesis of this syndrome are correct, this should be useful in the management of these patients.

SUMMARY

1. Twenty-seven cases of hepatic coma have been reviewed. The symptoms, signs, and laboratory find-

ings did not differ from those previously reported in the literature.

2. In 10 instances a factor precipitating hepatic coma was strongly indicated. Ammonia-containing compounds were suspected in six, barbiturates or opiates in two, and paracentesis in one. Sixteen patients had evidence of gastrointestinal bleeding which was undoubtedly a factor in producing further hepatic insufficiency and coma.

3. Present concepts as to the role of ammonia in the pathogenesis of hepatic coma have been briefly reviewed.

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Organized medicine is the mortar that cements 160,000 individual physicians into a solid fortress. This intact structure has a dual purpose—to protect the health of 160,000,000 inhabitants and to present a solid bulwark against external forces. Individual, loose bricks can be tossed around by a child; bricks well cemented together can resist cannon fire.

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Experience with a New Urographic Agent—Hypaque

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Progress in the improvement of radiopaque contrast media suitable for use in excretion urography has been steady since the first compound was tested by Swick in 1929.¹ This was an iodine-containing organic compound known as Uroselectan. Swick later introduced Hippuran, a compound which represents a normal product of animal metabolism acting as a carrier for the radiopaque chemical. This was followed by Uroselectan B and later by Abrodil or Skiodan. These were followed by Diodrast, which became one of the standards in the field of excretion urography.

As the compounds and techniques for using them improved, greater emphasis was placed on reduced toxicity and increased radiopaque content. The increased pressure of patient volume made it desirable to reduce the time involved in the actual injection of the media and the time lapse before adequate visualization could be obtained. The toxicity of the media still remains the primary consideration.

An effort to increase the iodine concentration per molecule was made with the introduction of sodium acetrizate, which was the first commercially available triiod compound. The increase in iodine from 2 to 3 atoms per molecule makes it possible to give 5.1 gms. of iodine in a 25 cc. dose of 30 per cent sodium acetrizate (Urokon Sodium—Mallinkrodt) as contrasted to 3.5 gms. of iodine per 20 cc. of 35 per cent solution of iodopyracet (Diodrast—Winthrop-Stearns, Inc.) or 5.2 gms. of iodine in a 20 cc. dose of 50 per cent sodium iodomethamate (Neo Iopax—Schering).

Sodium acetrizate is available in 30 and 70 per cent concentrations. Both of these concentrations have been tested for intravenous pyelography at this institution. Although there has been a decrease in injection time and a decrease in the time lapse before a diagnostic film is reached, the possibility for improvement in toxicity and side effect ratios remains. There is also some question as to the advisability of using the 70 per cent concentration as a routine pyelographic agent.

CRITERIA

Hospital or large clinic routine requires that the media used for intravenous pyelography be:

1. As non-toxic as possible (both from the stand-

point of generalized reaction and from the standpoint of local tissue irritation or vein cramp).

2. Available in containers which are easily handled. (A testing solution should be available in a separate ampule.)

3. Tolerated when injected rapidly as required by the newer techniques for production of nephrograms.

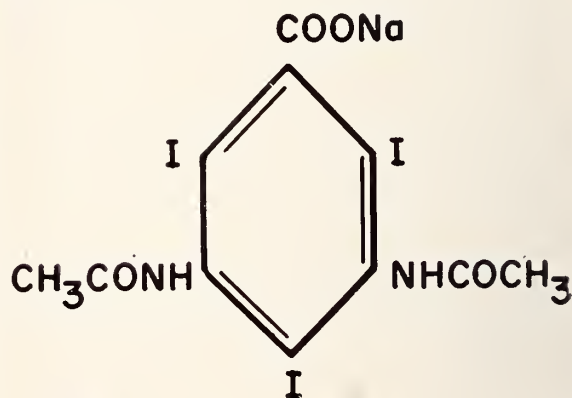
4. Visible in the kidney in sufficient density for diagnosis as rapidly as possible in order to conserve time on the x-ray table.

5. Productive of films of good quality so that the number of retakes is as low as possible.

6. Suitable for all commonly used techniques requiring radiopaque media, if possible.

With these criteria in mind, we propose to report recent work which has been done in testing Win 8308-3 (Hypaque—Winthrop-Stearns, Inc.).

Hypaque Sodium is 3,5-diacetamido-2,4,6-triiodobenzoate ($C_{11}H_8I_3N_2NaO_4$). It has a molecular weight of 636.0 with the following structural formula:



Hypaque Sodium is a white crystalline solid which contains 59.87 per cent iodine and is highly water soluble. The pH of the solution is 7.0 to 7.5. If a solution of Hypaque Sodium is chilled below room temperature, it may become cloudy or form a precipitate which disappears upon warming to room temperature. The sterile aqueous solution is clear and nearly colorless. It has a faint bitter taste, and it can be sterilized by heat in the customary manner without decomposition. It should be protected from strong light.

The laboratory data as supplied by Winthrop-

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Stearns, Inc.,² lists the results of animal testing with this media. The LD 50 for the following test animals is given.

Mice	12,600 mg/kg. \pm 877
Rats	10,750 mg/kg. \pm 500
Cats	11,300 mg/kg.

Rabbits were injected intravenously with 2,300 mgm/kg. without evidence of toxicity. The first vomiting occurred in the monkey at a dose of 4,000 mgm/kg. Deaths in this series appeared to be due to respiratory failure. In subacute toxicity testing, no significant hematologic changes were encountered, growth rates were not affected, bodyweight gains remained normal, and no microscopic lesions attributed to the media were noted during the experiments on rats, cats, mice, and monkeys. In chronic irritation studies in rabbits, it is apparent that Hypaque 50 per cent produced no greater irritation than sodium acetrizate 30 per cent or Diodrast 35 per cent. It definitely appears to be less toxic than Diodrast 70 per cent or sodium acetrizate 70 per cent.

DESCRIPTION OF TESTING

Two hundred eighteen patients, ranging in age from 7 to 85 years, were given Hypaque. Each patient was routinely prepared by dehydration and enemas prior to injection. No effort was made to select patients. Our technique remained unchanged except for an effort to establish injection times and optimal times

for taking of the film. Compression was used where the patient's condition permitted.

The first 40 cases tested received a complete pre-injection work-up, including allergic history and pertinent laboratory work. Every patient received a skin wheal of the dye and a slow intravenous injection of one cc. of material. After one minute the injection of 30 cc. of Hypaque was made over a period of four minutes. Blood pressure, pulse, and temperature were taken before, during, and after the injection. Any side effects which could be related to the dye were noted.

As a result of almost complete freedom from side effects on the first 40 cases, it was decided to increase injection speed. This was gradually done until the complete 30 cc. injection was being made in one minute (approximately as fast as the dye could be injected through a No. 20 needle). All patients were carefully observed for any reaction which might be attributed to the dye. Films were taken at 2, 4, 15 and 20 minutes.

SIDE EFFECTS

Of the 218 cases tested, 16 showed nausea, which in most instances was slight. Five patients actually vomited, and two patients showed slight urticaria. In one case in which a resident started an injection, the patient vomited after two or three cc. The resident properly discontinued the injection and returned the patient to the floor. Twenty-four hours later the patient was reinjected in a routine manner and did

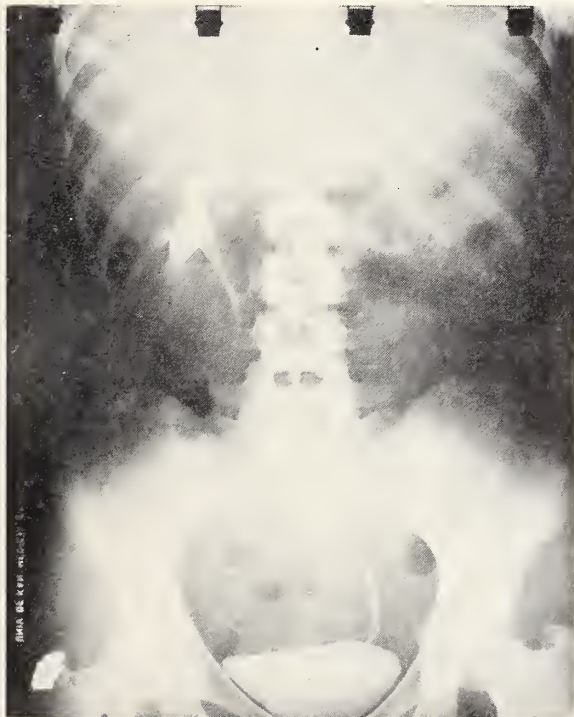


Figure 1. Ectopic kidney on the left, 20 minutes after intravenous injection of 30 cc. of 50 per cent Hypaque.



Figure 2. Twenty minutes after intravenous injection of 30 cc. of 50 per cent Hypaque.

not suffer the slightest reaction. This may serve to classify some of the patients showing nausea as a psychic reaction. A few of the patients gave an allergic history, but none of these individuals had any reaction.

Nausea	16 patients	7.5 per cent
Vomiting	5 patients	2.4 per cent
Urticaria	2 patients	0.1 per cent
Vein Spasm	0 patients	0.0 per cent

TOTAL Side Effects 10.0 per cent

Expressed differently and perhaps more significantly, 91.8 per cent of the patients were completely free from any side effects. We encountered no significant blood pressure drops, no respiratory distress, and no vein cramp.

EVALUATION

Evaluation of films was left almost entirely to the author. It is most difficult to arrive at an accurate evaluation of the concentration of media in a given case because of the variation in technique and the variation in the size of the patient. We attempted to discount these extraneous features and tried to impartially evaluate the concentration of the media.

Our evaluation was as follows:

Excellent	59
Good	97
Fair	43
Poor	14
No excretion of dye	4
Examination discontinued because of reaction at the site of the test dose	1

TOTAL 218

In our experience most films demonstrated clearly the renal pelvis, ureters, and bladder. Our best films were taken at four minutes.

SUMMARY AND IMPRESSIONS

Two hundred eighteen patients were injected with a new intravenous pyelographic agent, Hypaque. Our criteria for the qualifications of a good media are listed. The side effects encountered with Hypaque are described, and the results of the rating of films of these 218 examinations are given. We were impressed at the relative freedom from side effects. It is our impression that the density, dependability, speed of concentration, and general lack of discomfort to the patient when Hypaque is used cause this media to compare favorably with any available today.

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The Adolescent Conscience

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There are increasingly alarming reports about the conduct and behavior of our adolescents. We are being deluged with a mass of statistics which reveals that great numbers of adolescents are involved in serious crimes, in delinquency and vandalism, and in general recklessness and irresponsibility. It is possible to point to the historical fact that each adult generation has frequently come to the conclusion that the "young people are going to the dogs." It is possible, therefore, to consider that our more scientifically-minded society is simply using more advanced methods of making just that type of age-old observation.

An objective study, however, leads to the inevitable conclusion that this solution is too simple and too

pat to be applied to the current situation. Obviously, something of major concern is developing, and the difficulties which our modern adolescent is facing are of such a proportion that they constitute a major threat to our entire concept of the "normal" pattern of human development. As we read accounts of adolescent gangs demolishing libraries, assaulting older persons, defying our established moral and ethical codes, we cannot help but conclude that something has happened to what we may term the "adolescent conscience."

An exploratory study of this subject was made at the Child Study Unit, University of Kansas. The method consisted of asking a number of adolescents who were having difficulties in the "conscience" area, to produce their thoughts and versions of the topic. With characteristic adolescent enthusiasm, they

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chose to expound their views through the use of creative art and narrative. Their work furnishes graphic support for certain basic insights of this plaguing problem of conscience.

CASE 1

One of these youngsters is a 13-year-old boy. His mother died shortly after his birth, and the responsibility for his care fell to his step-grandmother. She had no children of her own and had married at a fairly late age. She was a strong and dominant person with an intense moral consciousness. She attempted to inculcate these qualities in her step-grandson. The boy grew up full of love, respect, and admiration for her. His one preoccupation was to do the things which pleased her and made her happy.

The one miscalculation in her regimen of training for him was that, in her determined effort to impose a moral sense in the child, she created in him the feeling that whenever he expressed himself in any independent way he was guilty of acting as if he did not love her. So, in him, any desire for self-assertion was equated with the danger of losing the love of the only person who gave meaning to his life. Although the boy possessed wellsprings of creativity and inventiveness, these soon began to wither and dry.

At school he began to be regarded as dull, unimaginative, lifeless, and totally lacking in spontaneity. The teachers knew that he had good intelligence and were increasingly concerned as their every effort to help him use his talents was frustrated. As the boy became aware of his increasing failure to meet the challenges of school, he became depressed and apathetic. Because he was so concerned that his every answer should be correct and without mistakes, he could never finish his school work, even with the simplest of assignments. When his grades reflected this failure, the boy was overwhelmed by the misery in his grandmother's eyes. He withdrew further into

himself, did not even attempt to do his work, was continuously tardy; his person was sloppy and untidy, and he gave every outward appearance of not caring about anything. He was a "problem adolescent," an adolescent without a "conscience."

He drew Figure 1.

He commented, "It shows a boy. He is the only one who can see his conscience. His conscience is an angel of good and a red devil of bad. The boy has been listening to and doing what the red devil tells him. That's why the angel has pulled away from the boy. The boy thinks that nobody can tell what he has been doing because they cannot see his conscience. But, the boy's ears are glowing, so everybody knows what he has been up to! I don't know if that's what you want. I really think that this is my grandmother's idea of conscience. I don't know if I have one or not."

In psychiatry, it was formerly considered that an infant was born with the various aspects of his personality structure already present. It was believed that the baby was capable of experiencing complex guilt reactions and other subtle, emotional nuances. Continued and exhaustive infant observation has led most psychiatric authorities to conclude that this is not true.¹

Current belief is that the infant is born with the potential to grow emotionally, just as he is born, perhaps, with the potential to grow and to develop six feet in height. None has ever proposed that the human infant requires that a portion of his basic personality structure must be "added on" from an outside source. What is required is that the infant be helped and directed so that the "rest-cells" of his personality can develop from within him.

As the case of the youngster we have just considered shows, you cannot "pour conscience into" a person, nor can you "tack it on." We cannot forget this principle when we deal with our troubled adolescents. We cannot "beat conscience into" them. It is not sufficient to lecture them, cajole them, threaten them, or punish them into better modes of behavior. We must furnish the guidance and the type of direction which will allow them to develop these values within themselves.

Physicians are best equipped for undertaking leadership in such an effort because they are trusted by both rebellious adolescents and perplexed, impatient adults. By precept and example, through the integrity of his daily living, the physician can construct the type of model which can be accepted by the adolescent, and can display a type of adult conscience which can become satisfying and rewarding to the adolescent. Medical educators are beginning to recognize the importance of integrity, honesty, and sincerity in young men and women who wish to become



Figure 1

physicians.² These are the qualities which medicine must possess to meet this great challenge. It becomes increasingly obvious that the key to the development of a conscience in the adolescent is the development of a conscience in the adult.

CASE 2

The second adolescent with whom conscience was discussed was a 14-year-old girl. The father was a salesman and was frequently away from home. The mother had great anxieties and concerns about her own ability to sustain the responsibility for the family by herself. Her constant thinking was in regard to the father, and she spent all the time when he was away preparing for his return. She spent her time when he was in the family attempting to convince him that he should change his occupation, and that he should devote more time to the family. Many quarrelsome discussions would take place.

Because the mother was so busy preparing for the father's return when he was away, and so busy quarreling with him when he was at home, the child began to feel that she could be noticed only if she were able to stage some form of dramatic and histrionic behavior. She began to talk in an exaggerated and offensively affected manner. She began to dress in startling fashion. She assumed such a pseudo-sophisticated air that she became increasingly repulsive to her classmates and to the school authorities. But she found that her swagger and bravado were still not sufficient to break through the mother's pre-occupations. The girl was being increasingly noticed, and labeled, by the community, but at home she still felt that she was only a part of the furnishings.

Finally, in a desperate effort to be noticed by those who were, still, the most important to her, she began to steal. This was against all that she had been taught and against all that she, herself, believed. Her struggle with herself was tremendous. However, the need to be acknowledged by her

family was even stronger, so she resorted to stealing large sums of money from her parents. This was a highly successful maneuver, and she quickly gained a great deal of attention. The word spread, and the community rendered the verdict of a "wild, adolescent girl who had been headed for trouble a long time," an adolescent without a "conscience."

She drew Figure 2.

She explained, "This is the hand of greed, and it is reaching out for 'greenbacks.' It's a kind of sickly and awful looking hand. It's just about to get the 'greenbacks,' too, but it gets noticed by Conscience, and she throws her hands up in horror and screams, 'Uh! Uh! Uh!' Maybe she even throws something at the hand to try and stop it."

One cannot overlook the tremendously hysterical tone of this drawing. The histrionics and drama are there for all to see. One gets the impression of a lurid and wild type of illustration. This might be an appropriate poster if Conscience were playing at the local burlesque theater. But, more significantly, it depicts the struggle this youngster feels. This is not a girl who does not care, and who does not think, and who does not feel. This is a girl in conflict. It illustrates that conscience is an individual thing. The type of conscience we have within us is flavored by the type of experience we have undergone in our daily living. Each person has conscience that is unique and that has developed along with every other pattern of behavior.³ In order to understand, we must study each individual and learn the ingredients that have spiced his personality.

There is really no such thing as an "adolescent conscience." We cannot study the boys and girls who come to us for help by doing research and exploring such a mass phenomenon as the "adolescent conscience." We must, instead, study and explore each individual youngster in order to clarify our thinking and to exercise a wise and mature judgment. Our methods are, presently, slow and cumbersome. They are not readily available to many segments of our besieged population. There are, at present, no general rules and no clear-cut answers. That is why research of an individualized type is necessary.

We must provide the type of facilities in our hospitals which can be devoted to such endeavors. We must insist that equipment, space, and wards must be provided for the study of each individual youngster. We must realistically understand that these facilities cannot service, at this stage, all the problem adolescents, but that the insight that is gained through the study of some will eventually be useful in serving the many. This is the approach that medicine has used with surgery, chemotherapy, heart research, cancer research, and polio research. The method has produced the desired results in instance

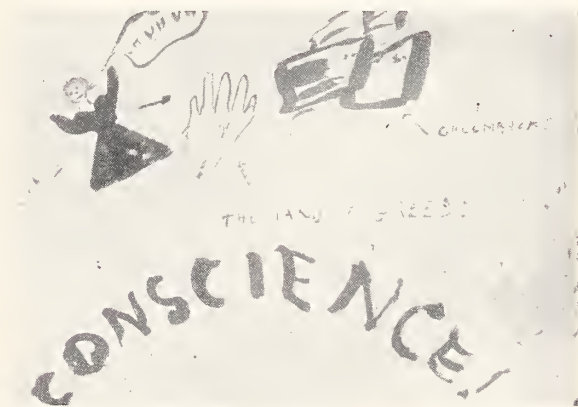


Figure 2

after instance. Now we must apply this method to such matters as conscience and personality.

CASE 3

The third adolescent was a 16-year-old boy. His mother was a weak and frightened woman. She felt a failure in whatever she attempted, and she turned to alcohol in an effort to numb her depression. Her boy was left to his own devices, even as an infant. On occasion she would collect herself sufficiently so that she would feed the youngster and care for him. This did not always happen, and the child passed from one severe illness to another. He was hospitalized many times. These were periods of extreme relief for the mother, and the hospital authorities were always faced with the problem of convincing her that the child was well and could be taken home. She would then place him with various relatives so that he could "convalesce." The boy was shuffled from one person to another, never gaining the opportunity to establish a meaningful relationship with any one adult who could serve as a model or who could, at least, provide some pattern of living for the boy.

Because of this tremendous lack of identification, the boy questioned at times whether he actually existed or whether he was just a wisp of smoke in an amorphous world. The only way he could make sure that he was actually an entity was to gauge the effect of his actions upon other people. Therefore, when they would react to him, he reasoned, it was because he was really there, and they had somebody toward whom to react. He made it his career, therefore, to constantly attempt to elicit a response from those about him, in order to reassure himself of his existence.

It did not take him long to discover that doing the things that other people did not like was the most certain method of getting them to react. He would spend a great deal of his time daydreaming in school. Whenever he would be called upon to recite, he would respond with bizarre and inappropriate remarks. He would saunter in and out of classrooms during class periods. To the teachers he was the most bewildering and obdurate pupil in school; to his classmates he was the "queerest, creepiest character" in school. Whenever anyone attempted to reason logically with him, his replies would be so vague, rambling, and irrelevant that even greater misunderstanding and exasperation would develop. The boy was a problem adolescent, an adolescent without a conscience.

He drew Figure 3.

He explained it by saying, "This is conscience, over here. He is a ballad singer. He sings about what goes on because he knows everything. This is a young

girl, sleeping on top of a hill. She is dreaming about a handsome Prince Charming. Coming up this side of the hill is a wolf. These crosses are what is in the wolf's mind when he sees the girl. He is



Figure 3

pretty excited. On the other side of the hill is the boy, and he sees the girl. You can't see him very well. He knows the wolf is there, and the boy has an axe with him. He has some thoughts about the girl, too. The wolf can see the boy, and the boy can see the wolf. They can both see the girl. But, neither one of them can see what is in her dream or what the other is thinking about. The girl doesn't see either of them. Conscience, up here, can see everything, and he knows how the story is going to come out. He might be able to change the way it comes out, but he just feels like singing about it, now."

It is not very difficult to arrive at the diagnosis of this youngster. By the unusual content and reasoning he displays, one immediately suspects a dissociated state. If we wished to interpret this production more dynamically, we could quickly point to the possibility that the wolf represents the destructive and "id" forces of the personality. The boy, no doubt, represents the weak and insipid ego which will not be able to overcome the challenge at hand. And conscience, although present and fully realizing what is happening, cannot do very much about it other than sing and observe.

The conclusion we may draw here is the fact that conscience cannot survive and effectively exert its energy unless the remainder of the personality is strong and healthy. Through a steady evolution of thought, medicine has reached the conclusion that it is impossible to separate the mind from the body. The two are one, and any attempt to compartmentalize destroys the integrity of the whole.

In personality, also, we must be aware of this principle.⁴ In order to help ourselves to think better, we have divided the personality into three such parts

as ego, id, and super-ego or conscience. But we must not lose sight of the fact that this is not the real case. The personality is more than the sum of its parts, and each section is dependent on the being of the other sections. In order to study and understand the adolescent conscience, we must, at the same time, study and understand the adolescent ego, the adolescent personality, and the adolescent physiology and anatomy.

That is why the medical setting is so tremendously important. It affords the opportunity for specialists in all fields to attempt to correlate, to share, and to integrate the knowledge they obtain, and thus form a significant and total picture which will ultimately solve the problems of the adolescent and of all mankind. Gradually ministers, educators, youth workers—all who are interested in people—are beginning to come to our medical centers and to participate in our work. As we grow to accept such developments and to encourage them in our daily routines and functions, broadening vistas of techniques, and knowledge, and usefulness will be available to us.

SUMMARY

This article has attempted to focus attention on three important considerations in regard to the con-

cept which has been called "the adolescent conscience":

1. Conscience is a value whose beginnings reside in every human infant. It is not something that must be added on, but it is a quality which must be helped to develop from the inside.

2. The development of conscience is an individual experience. It is, to a large extent, influenced by the total experiences of each person. In order to understand a person's conscience, or lack of it, we must understand the entire person.

3. Conscience cannot be separated from the remainder of the personality. Its strength or weakness is dependent upon the strength or weakness of the entire personality.

A plea is made for the provision of hospital facilities which will allow individualized study and research into perplexing problems, such as conscience and emotional illness.

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Some Basic Principles in the Medical Management of Peptic Ulcer

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The satisfactory practical treatment of benign peptic ulcer has one main objective as its basis. This basic principle of therapy is the adequate control of free acid in the stomach. Benign peptic ulcer does not exist in the absence of free acid. This fact serves to emphasize the importance of acid in the ulcer problem. The aims in treatment of the internist and surgeon are, therefore, quite understandably similar. It is their approach that differs. In general, what the internist attempts to do medically, the surgeon attempts to do by operation. All methods of currently

successful surgical procedures for ulcer are aimed at this fundamental problem of the control of free acid.

The development of gastric surgery for ulcer evolved around the control of the acid-forming capacity of the stomach. Resection of the stomach was finally developed into subtotal gastrectomy with the removal of a large portion of the stomach in order to produce the best long term results. The highly successful and relatively simple operation of vagotomy and gastroenterostomy also meets this fundamental acid problem and does so by providing control of the cephalic phase of gastric secretion.

In general, internists and surgeons agree that all

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patients with uncomplicated peptic ulcer should have thorough, adequate medical management. The main point of confusion seems to lie in the meaning of adequate management. There are three important factors which comprise adequate medical management: (1) effective acid control, which has been alluded to above; (2) a sufficient period of intensive therapy to allow for complete healing of the ulcer; and (3) a change in the living habits and personal philosophy of the patient.

The third factor, briefly speaking, is too frequently slighted, the reaction against it being that any type of ulcer treatment is not successful if the patient is unable to lead a totally uninhibited and unrestricted life after a limited period of medical therapy. Patients with diabetes, heart disease, arthritis, and numerous other ailments have learned to make necessary restrictions in activity and daily routine. The patient with peptic ulcer must also learn to accept his limitations. The attending physician must be certain that the ulcer patient always remains aware of this and, if necessary, he must put forth the extra effort to reindoctrinate him.

CONVENTIONAL MEDICAL THERAPY

Consideration of factor one, "effective acid control," in adequate medical management should be enlarged upon. Success of medical treatment in active ulcer is proportional to the extent of neutralization of free acid. Some commercially available antacid is usually employed. Many controlled clinical studies have demonstrated the comparative neutralizing abilities of numerous preparations. Today, of the many antacids offered for the treatment of ulcer, the physician must choose one which provides effective neutralization and is readily acceptable to the patient. It must not be excessively expensive and must have a minimum of undesirable side effects.

Uninterrupted, 24-hour total neutralization is not an absolute essential for healing of ulcer, but the nearer to this state that treatment can approach, the more confident can the physician be in anticipation of progressive healing. Insufficient or inadequate neutralization, on the other hand, may be frequently responsible for incomplete healing and early relapse. As a result of such failure, there is distrust on the part of the patient and doctor for any success of medical management.

Some ulcers, it should be added, respond to simple therapy, improving no matter which of the many antacids is used. These mild situations, however, are not the subject matter of the present discussion.

Acid neutralizing ability of various substances can be gauged by the resulting gastric pH. Milk and other proteins certainly act as buffers in the stomach. One finds, however, that the pH of gastric contents

is relatively unchanged with hourly ingestion of milk, gastric contents remaining highly acid. In order to neutralize the free acidity and raise the pH, it is necessary for the patient to take frequent dosages of effective antacids. Using the pH as a point of reference, it can be shown, for example, that in order to achieve a satisfactory neutralization, one antacid may be required in extremely large dosages to accomplish what another alkali can achieve in small amounts. It may be necessary, for example, to give as much as a full ounce of aluminum hydroxide hourly to cause only a moderate change in gastric acidity to a pH of 3.¹ This fact alone may make a schedule of management using certain antacids impractical and costly.

Of the many antacids available, calcium carbonate does inexpensively in small dosage what the physician desires, that is, elevate the gastric pH to 4 or higher.² The powder must be taken at frequent intervals throughout the day, with the addition of magnesium carbonate in appropriate amounts if constipation becomes a problem. A diet with minimal irritants, both chemical and physical, is prescribed in addition. Permanent dietary restrictions may be necessary even after the ulcer crater has healed.

Intensive therapy must be understood, therefore, as adequate control of the pH of gastric contents; a pH approaching 4 or higher is a desirable objective. At times it may become necessary to continue the control of pH throughout the night as well. The patient usually responds promptly on this program,

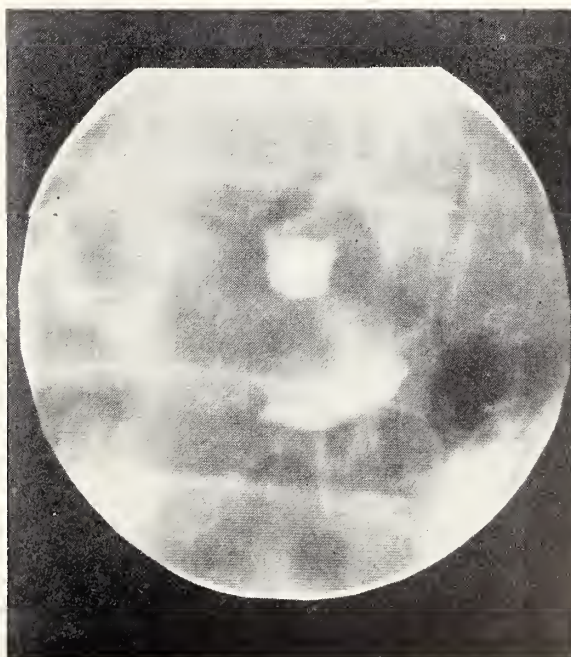


Figure 1. Patient J. L., Case 1. Large "en face" ulcer crater in the duodenal bulb present on admission.



Figure 2. Patient J. L., Case 1, after three weeks of therapy. Patient totally asymptomatic. The original ulcer crater was so large that little decrease in size could be expected in this short time.

becoming asymptomatic within one or two days and remaining so while conforming to this regimen.

Anticholinergic medications have become popular because of their supposed simplification in ulcer management. As with antacids, some are more potent than others. Their clinical effects are variable, and patients may develop tolerance to them. It is difficult to predict the type of response they will elicit. Relying on their use for controlling free acid in the fasting state is at best highly uncertain, and many of the drugs are known to be unsuccessful in controlling the increase in gastric acidity that accom-

panies eating. They are best used as adjuncts in the over-all management of ulcer.

The second important factor in medical treatment is length of time of intensive therapy. The co-operation of the patient is indispensable. The problem becomes somewhat more complex in complicated peptic ulcer. Rest with hospitalization is sometimes mandatory in management. For example patients with penetrating duodenal ulcers and those with obstruction because of narrowing due to spasm or edema may require several weeks of hospitalization for effective management. This may be illustrated by the following case.

CASE 1

J. L., a 58-year-old white male, entered the hospital with the complaints of periodic abdominal pain of 15 years' duration. One month prior to admission he developed severe epigastric pain, and one week before admission he had intermittent vomiting with pain. X-ray revealed a large ulcer crater in the duodenal bulb (Figure 1). He was placed on strict ulcer management and was aspirated nightly to determine the amount of retention in the stomach. This varied from 360 to 270 cc. and finally decreased to 90 cc. as he improved. It was necessary to keep him at bed rest and to increase the amount and frequency of his powders, continuing them every two hours during the night. He responded to this management.

When he was x-rayed three weeks later, he was totally asymptomatic, but nevertheless there was little change in the size of the ulcer crater as seen by x-ray (Figure 2). He continued asymptomatic. Nine weeks later x-ray revealed deformity of the bulb but no evidence of the ulcer crater (Figure 3).

In this instance of penetrating duodenal ulcer, hospitalization was indispensable. Prolonged, effective acid neutralization was necessary to prevent progres-

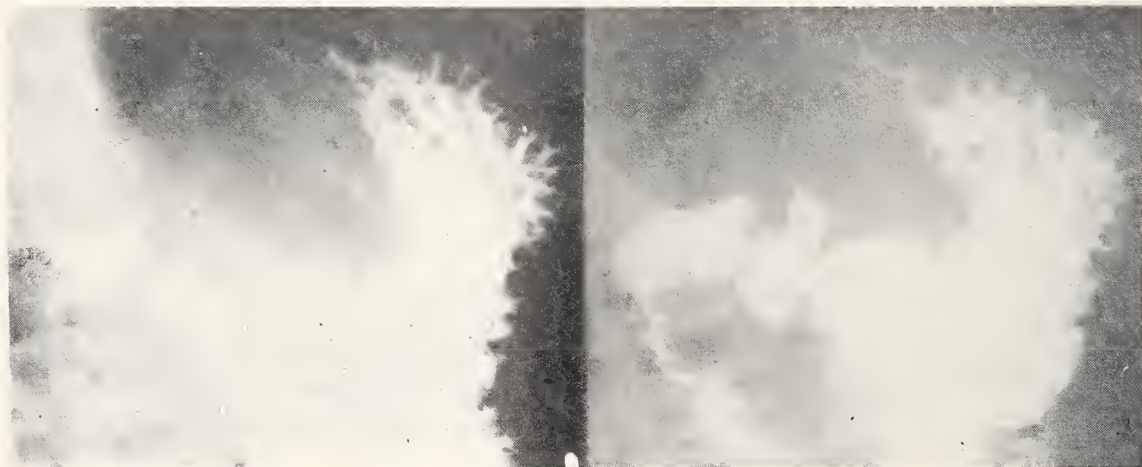


Figure 3. Patient J. L., Case 1, after nine weeks of therapy. Deformity of duodenal bulb is apparent. Crater is no longer visible.

sion of the ulcer and to promote healing. Improvement became apparent as pain decreased and obstruction lessened (determined by regular nightly aspiration measured in cubic centimeters of gastric juice retained). Solid foods were not permitted until spasm and edema were no longer a factor in obstruction.

The ulcer crater was still apparent on x-ray weeks after beginning therapy and disappeared at fluoroscopy only after a long term of management. Even after disappearance of the crater on x-ray films, intensive medical management was continued to insure complete healing. If strict management were not continued in such a case, early relapse could be expected.

Figures 1, 2, and 3 demonstrate the progress in healing of the ulcer as seen by x-ray and emphasize the point that a short period of ulcer management is insufficient to provide complete healing. The original large ulcer crater showed no decrease in size when viewed by x-ray after almost a month of intensive therapy, even though the patient had been asymptomatic for weeks previously.

The question of malignancy does not arise in patients with duodenal ulcer as it does in gastric ulcer. There is, of course, widespread discussion on the possibility of differentiating between a benign or malignant gastric ulcer preoperatively. Careful clinical evaluation should be employed in every case. A malignant ulcer masquerading as a benign lesion is by no means rare. Such deception is not the usual situation encountered, and other features, when recognized, can reveal the true nature of the lesion. The use of all diagnostic measures can help in making this decision in any particular patient.³ This includes the procedures of careful x-ray examination, with mucosal relief views, repeated gastroscopic examination, and studies on gastric washings for malignant cells. It is often necessary to repeat all examinations several times in the study of any one case.

If a decision cannot be made on the basis of such a careful evaluation, surgery should be recommended. Should a diagnosis of benign gastric ulcer be made and medical management be elected, the patient must be followed carefully by repeated examinations and evaluations over an extended period of time. Perhaps 60 per cent of benign gastric ulcers given intensive and adequate therapy respond satisfactorily to medical treatment.⁴ These figures speak for themselves and amply justify an adequate trial of medical management before resorting to subtotal gastric resection.

It has also been suggested that patients with gastric ulcer be given a limited period of medical treatment to determine healing before resorting to surgery. The suggested length of time of this therapeutic trial has varied, but a frequent time interval mentioned has been two or three weeks. Implications here have been that if the ulcer is not healed within this time limit, as demonstrated by x-ray, it is probably malignant and surgery should be done. This is not a good criterion. The following case demonstrates that healing in benign ulcer does not always become evident by x-ray within the first few weeks.

CASE 2

O. L., a 60-year-old white male with amyotrophic lateral sclerosis, was admitted to the hospital with a two-year history of epigastric pain relieved by food. A large 2 centimeter crater of the lesser curvature of the stomach was found at x-ray (Figure 4). This had all of the usual characteristics of a benign gastric ulcer. There was a high free acidity on gastric analysis. Gastroscopy revealed a benign gastric ulcer. X-ray approximately four weeks later showed no appreciable change in the size of the ulcer crater, although the patient was totally asymptomatic (Figure

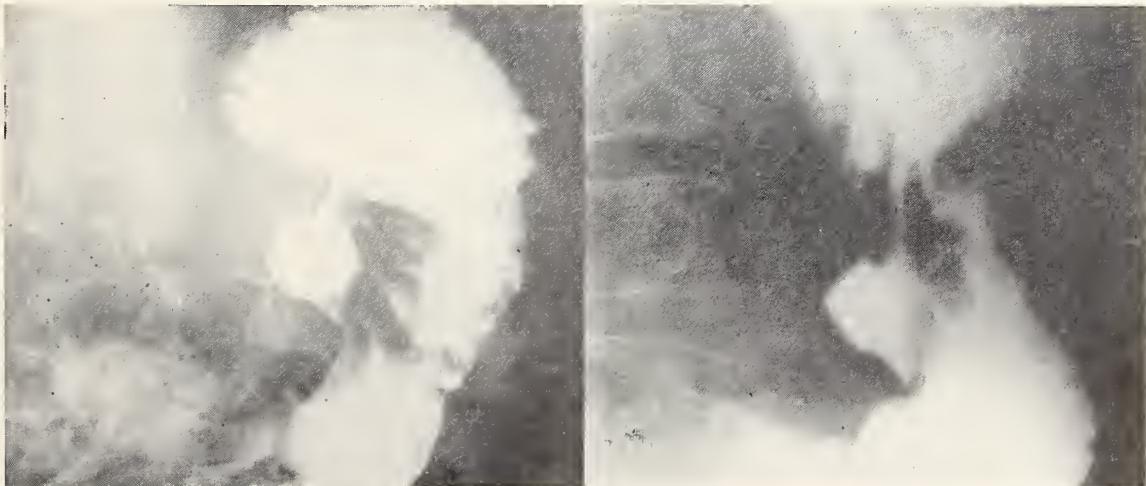


Figure 4. Patient O. L., Case 2. Large gastric ulcer on the lesser curvature with the usual characteristics of a benign lesion.

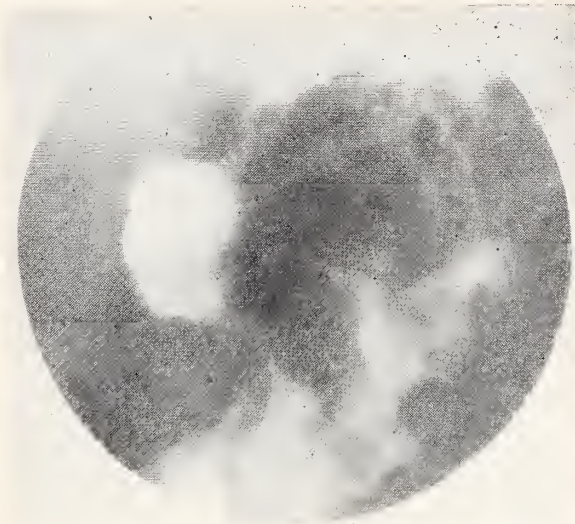


Figure 5. Patient O. L., Case 2. After four weeks of treatment there is practically no change in the size of the ulcer. Benign characteristics are again apparent.

5). At approximately eight weeks, however, there was marked healing, the crater measuring about 7 to 8 mm. in diameter (Figure 6). The lesion was followed gastroscopically to complete healing; a scar pocket at the site of the healed ulcer was found on the final x-ray study. Figure 5 demonstrates no appreciable x-ray evidence of healing at the end of four weeks; Figure 6, on the other hand, dem-



Figure 6. Patient O. L., Case 2. Marked healing of the ulcer crater after eight weeks of therapy.

onstrates rather dramatic healing at the end of eight weeks.

RADIATION THERAPY IN THE TREATMENT OF BENIGN ULCER

Since free acid is such a critical factor in the pathogenesis of benign peptic ulcer, other modes of treatment besides medical management and surgery have been explored. Bruegel in 1917 first tried radiation therapy in peptic ulcer. A carefully-controlled, large series of patients who received radiation therapy permits certain conclusions to be drawn.⁵ In the carefully selected patient, it can be demonstrated that radiation therapy to the fundus of the stomach frequently decreases gastric acidity for varying periods of time and often adds to the ease of medical management. Ideal effects of radiation are the development of achlorhydria. The following cases demonstrate the results as shown by clinical results and follow-up gastric analysis.

CASE 3

G. J., age 65, was admitted to the hospital in April 1954 with a story of weakness, vomiting, hematemesis, and tarry stools one month before admission. There was a 20-year history of indigestion and abdominal distress. One week before admission he was awakened regularly with night pain. There was a 15-pound weight loss. X-ray revealed a duodenal ulcer with some gastric retention. A one-hour basal gastric analysis is shown in Figure 7. The

ONE HOUR BASAL GASTRIC ANALYSIS

SPECIMEN	FREE ACID CLINICAL UNITS	TOTAL ACID
FASTING	88	110
1	95	108
2	80	100
3	70	87
4	81	99

G. J. #6791 4-27-54 DUODENAL ULCER

Figure 7. Patient G. J., Case 3. A typical high acid pattern of the basal gastric analysis in a patient with active duodenal ulcer.

high levels of free acid as shown in each specimen are typical for duodenal ulcer.

The patient was placed on ulcer management of milk and cream and calcium carbonate powders hourly and became completely asymptomatic within a few days. He was discharged but did not continue his management after leaving the hospital. He was readmitted in September because of recurrent pain and vomiting with nocturnal distress. A few days after admission he passed a grossly tarry stool, and blood transfusion was necessary to maintain his blood pres-

sure. Anticholinergic drugs were added to his program. His complaints gradually subsided by the sixth day, and radiation therapy was instituted. He was given a total depth dose of 1600 r to the gastric fundus, which he tolerated without any distress. Twelve days after the completion of radiation therapy, a two-hour gastric analysis revealed the results shown in Figure 8. The basal hour revealed no free acid in

TWO HOUR GASTRIC ANALYSIS (POST IRRADIATION THERAPY)

SPECIMEN	VOLUME	FREE ACID CLINICAL UNITS	TOTAL ACID
FASTING	8 cc.	0	2
1	21	0	2
2	4	0	0
3	6	0	1
4	5	0	<1
HISTOLOG STIMULATION			
1	5	0	17
2	20	0	21
3	21	11	32
4	12	0	25

G. J. #6791 10-27-54 DUODENAL ULCER

Figure 8. Patient G. J., Case 3. After radiation therapy there is absence of free acid in the basal hour. Free acid was obtained only after intense maximum stimulation with Histolog.

any specimen, and only after maximum, intense stimulation by Histolog injection was any acid obtained in the second hour.

He was called back two months later for re-x-ray and repeat gastric analysis. He volunteered that he had never felt better in many years. The x-ray demonstrated marked disappearance of the cloverleaf deformity that was present before radiation. In most of the views the cap appeared normal; there was no tenderness or irritability of the bulb. The results of gastric analysis are recorded in Figure 9.

TWO HOUR GASTRIC ANALYSIS (POST IRRADIATION THERAPY)

SPECIMEN	VOLUME	FREE ACID CLINICAL UNITS	TOTAL ACID
FASTING	4 cc.	0	0
1	<1	QNS	QNS
2	0	0	0
3	0	0	0
4	0	0	0
HISTOLOG STIMULATION			
1	1	0	5
2	5	7	29
3	3	13	20
4	3	16	27

G. J. #6791 12-15-54 DUODENAL ULCER

Figure 9. Patient G. J., Case 3. A repeat gastric analysis approximately nine weeks after completion of x-ray therapy.

CASE 4

Another patient, G. T., age 47 years, was treated in the same fashion by x-ray therapy. He was ad-

mitted in March of 1954 with a history of epigastric pain of 19 years' duration. Ten days prior to admission he developed severe abdominal pain associated with vomiting and was admitted to the hospital. X-ray revealed a marked deformity of the duodenal bulb. Results of a one-hour gastric analysis are shown in Figure 10. Again the high free acidity of the

ONE HOUR BASAL GASTRIC ANALYSIS

SPECIMEN	FREE ACID CLINICAL UNITS	TOTAL ACID
FASTING	59	67
1	46	56
2	64	72
3	71	81
4	76	86

G. T. #8871 3-25-54 DUODENAL ULCER

Figure 10. Patient G. T., Case 4. The gastric analysis reveals the high free acid expected in duodenal ulcer.

fractional samples is apparent. He was placed on ulcer management and rapidly became asymptomatic. A 10-day course of radiation to the fundus of the stomach was given. There was slight nausea toward the end of the period, but he had no other complaints. Three weeks after the completion of x-ray therapy, a two-hour gastric analysis revealed the results shown in Figure 11. He has remained asymptomatic.

TWO HOUR GASTRIC ANALYSIS (POST IRRADIATION THERAPY)

SPECIMEN	VOLUME	FREE ACID CLINICAL UNITS	TOTAL ACID
FASTING	17 cc.	0	6
1	21	0	6
2	20	0	12
3	22	0	10
4	18	0	6
HISTOLOG STIMULATION			
1	30	0	19
2	46	37	54
3	36	42	56
4	58	41	58

G. T. #8871 6-16-54 DUODENAL ULCER

Figure 11. Patient G. T., Case 4. Results of the gastric analysis three weeks after completion of radiation therapy. Free acid obtained only after intense stimulation with Histolog injection.

DISCUSSION

It cannot be overemphasized that the diagnosis of peptic ulcer must be carefully established. All too frequently functional disorders of the colon are mistakenly labeled peptic ulcer. This component in any patient's case must be recognized and treated accordingly. The treatment of functional disorders of the gastrointestinal tract is quite different from the treatment of peptic ulcer. Once the diagnosis of peptic

ulcer has been made, the success of medical treatment has been directly proportional to the extent of control of the acid gastric juice over weeks and months of therapy. Proper treatment instituted at an early date usually is the best guarantee of satisfactory response.

Some failures of medical management in peptic ulcer may be ascribed to treatment that is too short to allow for complete healing. A too rapid liberalization of diet without carefully chosen restrictions may be at fault in others. Another commonly encountered cause of failure in treatment is the disinterest on the part of the patient in following strict management after he begins to feel better with the disappearance of his symptoms.

Continued, sustained, intensive therapy must be insisted upon by the attending physician. Constant co-operation on the part of the patient may sometimes be achieved if the physician will initially take time to describe reasons underlying the medical program chosen and to discuss the long-term benefits of permanent changes in mode of living and diet. The patient with this measure of understanding is benefited

and more readily follows the restrictions which he knows keep him free of ulcer distress.

SUMMARY

1. Satisfactory medical management of peptic ulcer is based upon effective, prolonged neutralization of gastric acidity.
2. Patients with uncomplicated gastric or duodenal ulcer should have a thorough and adequate trial of intensive medical management before surgery is recommended.
3. Radiation therapy to the fundus of the stomach provides an additional effective means for treating peptic ulcer in the carefully selected patient.

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Management of the Chronic Alcoholic

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Richmond, Virginia

May I say how happy I am to respond to your invitation to participate in this postgraduate medical study sponsored by the University of Kansas in co-operation with The Kansas Medical Society and the Kansas State Board of Health.

My assignment today is to present to you what must be, by virtue of the limitations of time, a rather abridged survey of modern developments in the management of chronic alcoholics. This topic is most timely since the problem of chronic alcoholism is a major one in our society today—not only in the number of people involved but also in the extent of damage done in terms of financial loss and human suffering. We encounter alcoholism more and more as a problem within that large so-called middle class that we think of as the solid, stable backbone of our nation. The state of Kansas, in common with a

majority of the other states of the union, is taking special cognizance of alcoholism, and we are to listen this afternoon to a report by Mr. Lewis W. Andrews on the activity of the Kansas State Commission on Alcoholism.

Concern for alcoholics from the medical viewpoint is by no means new. Fifty years ago, for example, much attention was focused by psychiatrists and internists upon this problem in its etiological and therapeutic aspects, especially on the continent of Europe. For a variety of reasons, activity in this field subsequently dwindled. For many years physicians appeared to have contact with alcoholics, in large part, only in administration of symptomatic treatment and in therapy designed to handle specific complications of alcoholism, such as liver dysfunction, Wernicke's encephalitis, and Korsakoff's psychosis. The comprehensive approach to the problem by some of the continental investigators of alcoholism was often overlooked. Many physicians preferred not to have anything to do with alcoholics as patients. It was

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found that a therapeutic onslaught on presumed etiological bases did not always arrest the drinking; in fact, therapeutic efforts were frequently disappointingly unsuccessful.

The last 10 or more years have seen a remarkable reawakening of activity in this field; and, especially at the state level, a large number of treatment and rehabilitation centers has been established and research investigation has been sponsored. This renewed interest, in a large measure, is the outcome of the pioneer work of the Yale Center on Alcohol Studies and the phenomenal growth of Alcoholics Anonymous through which thousands of alcoholics have been able to attain sobriety and restoration to useful, satisfying, and productive lives.

We are still far from a fully adequate understanding of the medical, social, and psychological dynamics of alcoholism. Many alcoholics, it is true, stand out as immature, insecure individuals, and yet not every mentally or emotionally troubled person becomes an alcoholic. Not every alcoholic presents a clearly discerned pre-alcoholic history of mental or emotional disturbance. As the condition runs its course, all alcoholics become troubled, nervous and upset. Sherfey, analyzing a group of alcoholics, has recently reported that about 40 per cent of the patients suffered from well-defined psychiatric illnesses, while in about 60 per cent no definite psychiatric diagnosis could be established, although the patients showed various constellations of psychological instability or inadequacy.

Although alcoholics are a ubiquitous group in a judge's court, a personnel counselor's or clergyman's study, or in a physician's practice, they do not exhibit a single, typical, exclusive pattern of physiological, psychological, or social symptomatology and behavior. Alcoholism stands out as a unifying symptom in a diverse collection of people whose sickness is protean, complex, and often intractable. Many alcoholics reveal evidence of serious failure of maturation with dependency at an oral level. There are those with an outstanding picture of psychosexual inadequacy. We see schizoid patients and those with manic-depressive tendencies who become alcoholics and those with psychopathically and sociopathically inadequate personalities. In fact most, if not all, of the psychiatric diagnostic categories have been utilized in our attempts to denominate the alcoholic's illness.

Chronic alcoholics present multiple symptoms; in simple terms, the alcoholic may be said to be "sick all over." His condition involves medical, psychological, domestic, economic, and social disturbances. Each one regards himself as a special case, different from others.

Modern interest in the care of alcoholics and the pathological processes in alcoholism has inspired se-

rious efforts at understanding and classification of this baffling group of unhappy folk, study of their possible psychological, biochemical, and psychiatric peculiarities, and special techniques for their rehabilitation. This interest has brought together basic biological scientists, psychologists, social workers, sociologists, internists, and psychiatrists, in collaboration. Much has been learned, and we owe a great deal to the help and co-operation of general practitioners of medicine.

There have been many failures and some successes, enough of both to encourage further endeavor. Many questions still demand answers. The psychologist, for instance, would like to know to what extent pre-existing psychological abnormalities constitute an etiological source. Biochemists and internists are wrestling with the problem of the possible role of hormonal imbalance and genetically transmitted metabolic deficiencies as causative factors in alcoholism. Psychiatric research is again struggling with the problem of psychopathological factors in alcoholism from the vantage point of modern advances in psychiatry. It may turn out that in most, if not all, alcoholics, we have to deal with a complex and multiple etiology with a number of factors operating.

On the other hand, it is just possible that some fairly simple underlying causative factor common to all alcoholics may be uncovered. If this happens, therapy will be revolutionized in the direction of great simplification. Until that time, no treatment is adequate that does not envisage a comprehensive, many-sided approach to the patient's problems. Insofar as possible, the therapeutic approach must be based upon the soundest possible knowledge that we have, at present, of the dynamics of the condition and the most skillful, inclusive diagnosis that we can make. Since it is apparent that our knowledge of these dynamics is faulty, alcoholism is recognized as a valid field of research in the basic medical sciences, psychology, internal medicine, sociology, and psychiatry.

Our own Division of Alcohol Studies and Rehabilitation of the Commonwealth of Virginia has been structured upon the desire to provide the comprehensive care we have just been discussing. Since the establishment of the Division in October, 1948, we have admitted just over 2,000 patients. Our treatment facility consists of a ward within one geographical locality in the Medical College of Virginia Hospital, outpatient clinic facilities within the same location in the Medical College of Virginia, and another clinic in the more western part of our state at Roanoke.

Our activity is one of the Divisions of the State Department of Health and is linked, by the law establishing our division, with the Medical College

of Virginia, which is one of our two state medical schools. The establishment of the program within the State Department of Health, sponsored by general funds, accords recognition of the problem of alcoholism as a public health responsibility of the people as a whole. It also permits us to make use of the high degree of organization and state-wide distribution of facilities of the health department.

Our integration within the Medical College of Virginia affords us the advantage of a free flow of cross-referrals and cross-consultations between our division and other departments of the school of medicine and the teaching hospital. Our development within the medical college has enabled us, in addition, to initiate and maintain laboratories and staff for the conduct of basic research. Indeed, we feel that it would be difficult, if not impossible, to design a fully comprehensive program entirely unrelated to a medical center for teaching and research.

The Virginia program is a pilot study. In the six years since the legislative act establishing our division in 1948, our principal experience has been with a therapeutic plan involving initial hospitalization for a relatively brief period of eight days to two weeks, followed by individualized therapy in one of our outpatient clinics for at least a year's time. We accept patients on a voluntary basis. Any resident of the state may seek treatment and may be charged no more than the actual cost. We have never refused first admission to any applicant because of inability to pay. For any patient unable to pay the costs of treatment at once, a plan of installment payment is worked out as a part of his program of rehabilitation. Payment of treatment costs is stressed as a necessary part of recovery of responsible status in the community. In practice, we find that patient repayments amount to somewhat more than 40 per cent of actual hospitalization and clinic costs.

Of the 2,016 patients accepted for treatment through the end of October, 1954, 88.5 per cent are men and 11.5 per cent are women. Of these, 31.6 per cent were referred by physicians (mostly general practitioners), 6.6 per cent by courts, 2.7 by social agencies, 2.5 by clergymen, 11.1 by Alcoholics Anonymous, 7.6 by the spouse, 13.1 by other relatives, 11.6 by friends (often former patients), and 3.3 by others. We find that 9.9 per cent are self-referred.

It has been our experience that patients referred by physicians, social agencies, courts, and clergy tend to have the most favorable clinical course. Those referred by Alcoholics Anonymous show a good recovery rate. Patients referred by the wife or husband have the poorest rehabilitation record.

Factors responsible for these differences are complex. A significant factor in the case of those referred by the spouse is defective motivation on the part of

the patient himself. We believe that the superior record of those referred by physicians and other objective referral sources stems, in part at least, from the skill of the physician, social worker, judge, or clergyman in pre-selecting those suitable for rehabilitation in our service.

Our accepted patients range in age from under 20 to over 60. If we divide the patients into five-year age groups, we find that the group of males from 36 to 40 contains the largest number; for the women, the peak occurs in the 31- to 35-year group.

We believe that the process of intake is highly important. We give each applicant a preliminary interview in which he is accorded an opportunity of talking over his problems with a physician who is accepting, non-condemnatory, and willing to listen with respect. The prospective patient has a chance to express his motivations, his failures, and his doubts. We do not try to persuade the applicant to seek admission, but we discuss with him our plan of treatment in an attempt to help him to see his own situation more realistically and make up his own mind. Sometimes an applicant will decide that he really came only because his wife wanted him to do so. Such a man may, after the interview, say he wishes to go home and think it over further. In a month or so we may see him again, this time well motivated to accept treatment based upon a realization of his own need for help. In practice, we accept about 90 per cent of all who come for interviews. The other 10 per cent are usually recommended for treatment by mental hospitals, private sanatoria, or private psychiatrists.

All of our patients give histories of progressively serious difficulties related to uncontrolled drinking, usually for several years. Most have received previous treatment for alcoholism in private sanatoria, state hospitals, or from private physicians. Most have been drinking heavily within a day prior to admission. Every effort is made to admit accepted patients on the day of their application interview, and generally this is possible. We usually have a waiting list of applicants, but we find that if a patient cannot be admitted within two or three days he tends to seek help elsewhere. If our service is full, we give suggestions and advice to the referring physician for private, home care of his patient until a bed becomes available. This often serves to lower the decay rate of the waiting list and insures admission of many who would otherwise drop out at the start.

In the hospital, all patients receive medical, psychological, psychiatric, and social work-up as indicated. Therapy includes necessary medical care as well as group psychotherapy during the hospital stay, followed by individual psychotherapy and other care in the outpatient clinic. Patients occupy two-bed

rooms, and the service is planned and organized for group living. If the patient is out of a job or having difficulties in his work, or if there are domestic difficulties, these are handled by counseling with employment counselors or our psychiatric social workers. Members of the patient's family, employer, clergyman, domestic relations judge, or other concerned persons are drawn into the therapeutic situation when desirable and when the patient is agreeable. In all therapeutic planning, the active, central role of the patient is kept foremost. In successful treatment, the patient realizes that he "carries the ball" and is not a passive subject being "worked on."

Medical examination is thorough and includes renal and hepatic function tests, blood studies, x-ray, and electrocardiogram. Fasting blood sugar is measured in all patients, and the electro-encephalogram and other special procedures are done as needed. Our own medical and psychiatric staff usually finds it possible to make diagnoses, but we regularly seek consultation from other departments, notably, neuropsychiatry, medicine, surgery, neurosurgery, gynecology, orthopedics, physical medicine, and the dental school. During hospitalization, many patients undergo corrective surgery, treatment for neglected gynecological conditions, or dental restoration. We regularly diagnose such a condition as diabetes and initiate treatment. A survey of our findings and recommended treatment is sent to the patient's family physician when the patient leaves the hospital.

If the patient is qualified, physically and mentally, to receive disulfiram (antabuse), this is started while he is in the hospital. It is our usual recommendation that he continue to take disulfiram daily (usually 250 mgm.) for at least a year.

We work closely with Alcoholics Anonymous. Members of A.A. lead a group discussion session each Monday evening in our ward, and patients attend A.A. meetings in the community while in the hospital. Members of A.A. call for patients in cars and take them to the meeting. Also, with the permission of the patient, we write to the secretary of the local A.A. group nearest the patient's home asking that a member of A.A. call on the patient when he goes home. Through these means, a large proportion of our patients join A.A., and over the past six years we have found that many of our old patients have become leaders in A.A. groups throughout the state.

We find that 84.5 per cent of our patients persist for a longer or shorter period of time in outpatient therapy. Our records show that 7.1 per cent discharge themselves during the inpatient period. A further 9.4 per cent cannot be traced although they completed the inpatient phase of treatment.

Each patient is assigned to one particular physician who follows him in the outpatient clinic and directs any continuing social work, domestic rehabilitation, job placement, and other therapy.

In evaluating results of treatment, we have used a number of criteria—medical, psychiatric, and social. One criterion that permits quantitative, mathematical handling is abstinence from alcohol. This criterion has several defects, one of which is the exclusive emphasis it places upon drinking as a factor in the patient's total problem. Using the abstinence record, we find that 25.7 per cent of our patients have been completely abstinent since the onset of therapy. An additional 15.2 per cent have maintained sobriety after one relapse; 24.2 per cent have had more than one drinking episode but have shown improvement as measured by better family, economic, and community adjustment. In 14.8 per cent of the patients, there has been no improvement. We discern a small group of 3.6 per cent, previously placed in the unimproved category, who have subsequently maintained abstinence for at least six months. Thus, 68.7 per cent of all our patients may be said to have shown some measure of improvement.

Of the disulfiram patients, 76.3 per cent have benefited by treatment, while 55 per cent of those who did not take disulfiram are classified as improved. This difference is statistically significant (as measured by t-tests of significance). We have found that male patients do significantly better than females.

Our earlier studies, published in 1953, revealed consistently poorer results for patients under 30 in both the disulfiram and control groups. Our present, more complete, longer-term studies now indicate that the under 30's have nearly but not quite so good a record as the whole group. Of the five-year age categories where significant percentages may be derived, it appears that the disulfiram group between 40 and 44 made the best score (79.4 per cent improved out of 219 cases).

Investigation of our statistics reveals the striking fact that the disulfiram group has a much better record of outpatient follow-up and contact with the clinics than do the controls. A major function of disulfiram may, therefore, be to differentiate more highly from less highly motivated patients, to select those who will continue treatment more faithfully, and to provide additional incentive for continuation of treatment. Examining this point statistically, we have found *no* significant difference between the scores of the disulfiram and control groups if we eliminate those who dropped out of treatment early or broke contact later.

Disulfiram holds various meanings for patients. Our clinical judgment suggests that for individual patients, disulfiram has meaning that is contributory

to a favorable course. We would conclude, therefore, that disulfiram is a useful adjunct in a comprehensive plan of therapy of patients amenable to voluntary treatment.

As stated, our own experience has been mostly with patients suitable for voluntary care. Motivation is a major element in success. Our experience shows that motivation can be studied as to quality and can be developed, maintained, and improved by skillful management.

At present a special study commission in Virginia is working on plans for expansion of our state program for alcoholics. My own thinking is that the most favorable pattern involves outpatient clinics to which private physicians and others refer patients, these clinics to send patients to a central unit located

in each of our two state medical schools for comprehensive work-up and initiation of an individualized treatment plan. From the central units, patients would return to their own community clinic for long-term outpatient follow-up. For special care of those cases requiring commitment, I believe consideration should be given to the possibility of special facilities where more extended institutional care may be offered.

In conclusion, I think it may fairly be said that the treatment of alcoholics gives promise if based upon a comprehensive plan of action—utilizing our newer knowledge in the basic sciences, internal medicine, psychology, sociology, and psychiatry. Our efforts for the rehabilitation of alcoholics must be integrated with sound research and these, in turn, with forward-looking action toward prevention.

Congenital Pulmonary Arteriovenous Fistula

Fethi Gonlubol, M.D., and E. Grey Dimond, M.D.

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Since the first description by Churton in 1897, pulmonary arteriovenous fistula has been recognized as a clinical entity. The historical development of our present knowledge about this subject has been summarized in Table I.

We are presenting another case of pulmonary arteriovenous fistula cured by surgical resection of the fistula.

CASE REPORT

E. G., a 19-year-old white male student, entered the University of Kansas Medical Center on June 8, 1954, with the chief complaint of having "too much blood." With the exception of having been told by several laymen that he had blue lips and blue-dusky fingernails, he denied any specific symptom. About three weeks prior to admission, because of the cyanosis observed by his local physician,* the patient was referred to the K.U. Medical Center for evaluation.

The only positive findings in the past history were chickenpox, mumps, measles, and tonsillectomy. Family history was not contributory.

Physical examination: Blood pressure 130/100 mm. Hg., pulse 88 per minute, and respiration 18 per

minute. Positive findings included healed central chorioretinitis of the right eye with similar peripheral lesions in each eye. Lips and mucous membranes were cyanotic. Chest was clear to palpation, percussion, and auscultation. However, after exercise a minimal hum over the right mid-axillary region was heard. This was accentuated in inspiration.

Laboratory examination: Urine was acid, specific gravity 1.021, albumin and sugar negative; microscopic examination showed 5-8 pus cells per high power field; hematocrit 70 per cent, red blood count 9.3 million, hemoglobin 19.6 grams or 126 per cent of normal; white blood count was 7,300 with 75 per cent polymorphonuclear leucocytes, 12 per cent lymphocytes, 1 per cent eosinophiles, 12 per cent monocytes; platelets 170,000 per cmm.; serologic test negative for syphilis; fasting blood sugar 71 mg. per 100 cc.; serum sodium, potassium and chloride were normal; CO₂ combining power 21.4 mEq./liter; blood urea nitrogen 12 mg. per 100 cc.

Total blood volume was 122 cc. per kg., total plasma volume 35 cc. per kg., and total red cell mass 87 cc. per kg. Average normals are 70-85, 40-48, and 30-37 cc. per kilogram body weight, respectively. Arterial oxygen content was 15.7 per cent or 64.3

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per cent saturated. Roentgenographic and fluoroscopic examination of the chest revealed a normal size heart with definite pulsation of the right pulmonary artery and an area of infiltrative shadow in the right middle lobe extending to the hilum. This measured 5 by 7 cm. in size (Figure 1).

An angiocardigram by injection of 40 cc. Diodrast into the right antecubital vein was performed (Figure 1), and six films were taken in the ensuing four seconds. This demonstrated an arteriovenous fistula in the right lung base.

On the 10th hospital day, right middle lobectomy was performed.* Immediately after surgery, the cyanosis disappeared. The hematocrit gradually decreased, being 49 cc. on the 8th postoperative day. Arterial oxygen saturation rose from the original level of 64.4 per cent to 91.4 per cent, determined six days after pneumonectomy.

Pathology study:** The surgical specimen weighed 55 Gm. On section, two groups of well demarcated, about 2 cm. thick, bullous areas were present which were separated from the surrounding tissue. The cystic bullae varied from 0.3 to 1 cm. in diameter. An artery and a vein to the superior group and a vein to the inferior group were traceable. Arterial supply to the inferior group was not demonstrated. Microscopic examination showed that the large vascular spaces seen grossly had extremely thin fibrous walls, contained varying amounts of elastic tissue, and were endothelial lined. They were poorly supported by

the surrounding stroma and represented both arteries and veins.

GENERAL DISCUSSION

Pulmonary arteriovenous fistulae are not a commonly seen condition. For instance, Jennes found no case in examining 14,532 autopsies in Johns Hopkins Hospital from 1936 to 1945. Also Sesson *et al.* found only one case among 19,415 autopsies in the same hospital. It is more common in men than in women. The onset of symptoms varies. It is most commonly recognized in the second and third decades of life.

The most common findings are cyanosis, clubbing of digits, dyspnea on effort, and polycythemia. Cyanosis is present in almost all cases though it may not be detected clinically. The onset can be early or late, abrupt or progressive. Squatting may occur. Clubbing is frequently seen but may not be present. Red blood counts up to 11.4 millions with hemoglobin of 180 per cent and hematocrit up to 90 per cent have been described. In a recently reported case, by Hultgren and Gerbode,⁸ it is interesting to note that the patient's platelets count rose from 50,000 per cmm. to 132,000 after the resection of the pulmonary arteriovenous fistula.

Total blood volume is also increased, primarily due to increased red cell mass. This is contrary to the systemic arteriovenous fistulae in which increased blood volume is primarily due to increased plasma volume, and red cell mass is usually normal.

Hemoptysis was seen in about one-fifth of the

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** James O. Boley, M.D.

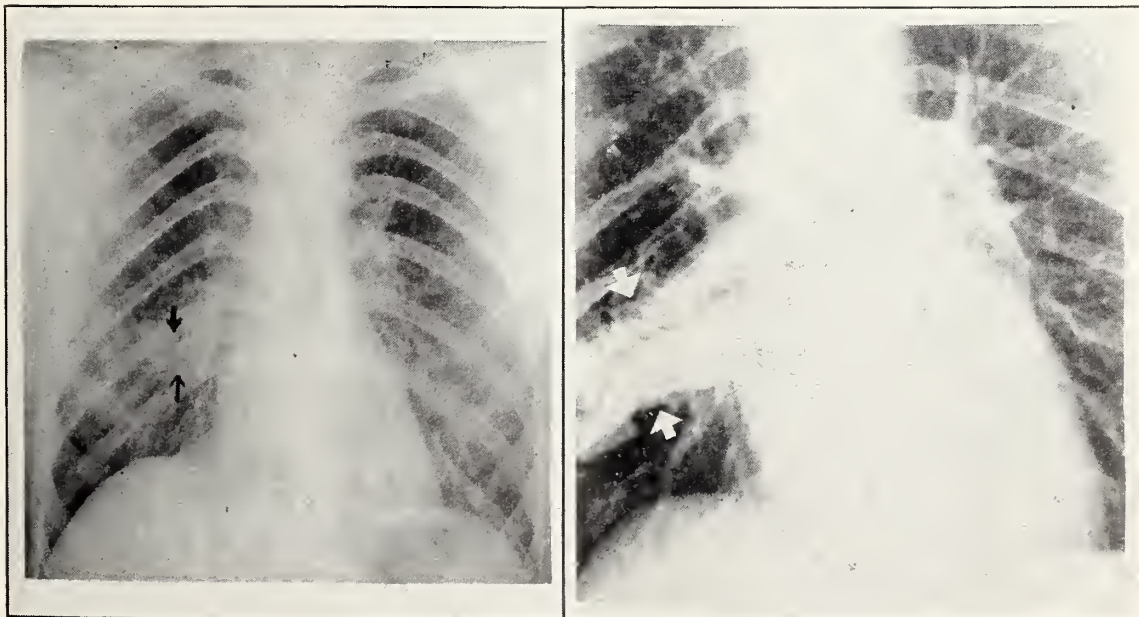


Figure 1. Film on right is routine chest plate with arrows indicating site of fistula. Film on left obtained during angiogram with fistula demonstrating opacity.



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TABLE I
HISTORICAL REVIEW

Author	Year	Remarks
Churton	1897	12-year-old male. Roaring pulmonary systolic bruit, accentuated P ₂ , and episodes of epistaxis and hemoptysis during life. At necropsy, four aneurysms of the secondary branches of pulmonary artery in one lung and three in the other lung were found.
Wilkins	1917	23-year-old female with cyanosis, clubbing, and bruit in the chest who died from hemothorax. Autopsy showed multiple aneurysms of right middle, right lower, and left lower lobes.
de Large and de Vries Robles	1923	10-week-old infant with dyspnea and convulsions. Autopsy showed multiple "hemangioma" of the lung, three in right upper and two in left upper lobe.
Reading	1932	4-year-old female with cyanosis since birth, clubbing, weakness, bruit in the chest, 102 per cent Hb and 6.7 million red cells. Died from brain abscess. At autopsy multiple "telangiectasia" of the left lung were found.
Bowers	1936	2-day-old male with dyspnea who died from hemothorax. At autopsy multiple "hemangioma" in right and left lung were found.
Rodes	1938	25-year-old male with dyspnea, cyanosis, clubbing, hemangiomas of lips, chest pain, and convulsions, Hb. 118 per cent, RBC 7.54 million. Died from a sudden pulmonary hemorrhage. At autopsy multiple cavernous hemangioma of right and left lung were found.
Smith and Horton	1939	40-year-old male, cyanotic since birth. Clubbing, dyspnea, vertigo, distress in the precordium, numbness of hands and feet, bruit in the chest were present. Diagnosis of arteriovenous aneurysm of the lung was made by angiocardioagram.
Hepburn and Dauphinee	1942	23-year-old female with cyanosis, clubbing, dyspnea, Hb. 146 per cent, RBC 9.6 million, arterial oxygen saturation 73 per cent, hematocrit 80 cc. Hemangioma of right middle and right lower lobe. Patient was cured by right pneumonectomy.

reported cases and in two of the cases was the cause of death.

Epistaxis is an even more frequent finding, occurring in about one-third of the cases. This may be an early or late symptom. Both hemoptysis and epistaxis are apparently due to hemangioma or telangiectasia of the nasal mucosa or bronchial tree.

Hemangioma or telangiectasia of mucous membrane or skin is also common and was present in about half of the reported cases. Most frequently affected areas are the lips, skin of the face, ears, retina (in five cases), and tongue. In two of the cases, cavernous angioma of the liver (in one of which angioma of the stomach was also present) was found in the post-mortem examination.

The relationship between pulmonary arteriovenous fistula, Rendu-Osler-Weber disease, heredito-familial angiomatosis or hereditary hemorrhagic telangiectasia has been discussed by several authors and will not be reported here.

Fainting is a relatively common finding, and convulsions, cerebrovascular accidents, and numbness of extremities have been described (Lindgren,⁹ Watson,¹⁰ Baer *et al.*,¹¹ Yater *et al.*¹²). Cerebral air embolism has been claimed to be responsible for some of the neurologic findings, and even "during the operation, before the lung had been touched by the surgeon's knife, air-bubbles could be identified in the vessel of the angioma" (Giampalmo¹³). However, it is unlikely that air embolism is responsible for all of the neurologic findings. Anoxia and small cerebral thrombosis because of the polycythemia may play a role in some of the cases.

Cardiac arrhythmia with Stokes-Adams attacks has been described (Ronald¹⁴).

On auscultation, a hum or a continuous murmur over the chest corresponding to the fistula may be heard. This is usually accentuated in inspiration.

Roentgenograms have a diagnostic value and in most of the cases show circumscribed lesions in the chest. Fluoroscopic examination of the heart usually reveals no abnormalities. The taking of an angiocardioagram is the procedure of choice for the diagnosis of this condition and gives the characteristic picture of arteriovenous fistulae of the lung.

The condition can be differentiated from congenital cardiac anomalies of cyanotic type, polycythemia vera, pulmonary tuberculosis, and the other pulmonary lesions by means of clinical finding, laboratory procedures and especially angiocardioagram (unless the lesions are multiple, very small, and scattered over the lungs).

Treatment is primarily surgical either by resection of the fistula, lobectomy, or pneumonectomy if necessary.

PHYSIOLOGICAL STUDIES

With the exception of decreased effective pulmonary blood flow and arterial oxygen desaturation, cardiac catheterization findings are essentially normal in most cases of pulmonary arteriovenous fistulae. However, catheterization is useful for calculation of the degree of shunt and to rule out congenital cardiac anomalies (or the presence of both in combination). This is not a necessary diagnostic procedure and by angiocardioagraphy all necessary information, including location, size, and number of lesions, can

be obtained. For this reason in this patient, angiocardiology was preferred to catheterization.

In systemic arteriovenous fistulae, cardiac output is increased in proportion to the size of the fistula, as a result of decreased total peripheral vascular resistance and increased venous return which leads to increased cardiac output. In pulmonary arteriovenous fistulae, on the other hand, cardiac output has been found to be within the normal range in most cases, unless the fistula is large and decreases the total pulmonary resistance markedly. This difference in effect of the peripheral and the pulmonary arteriovenous fistulae on the circulation can be explained on the basis of the pressure differences in the arterial and venous sides of the fistula and because of the difference in the total pulmonary and peripheral vascular resistances (Figure 2).

In the systemic arteriovenous fistula, the shunt is between the systemic arterial circulation of high pressure and the systemic venous side of low pressure. On the other hand, in pulmonary arteriovenous fistula, the shunt is between the low pressure pulmonary arterial bed and the equally low pressure pulmonary venous bed. As the degree of shunt through a fistula depends upon the pressure differences between the arterial and the venous sides of the fistula, we can anticipate that fistulae of the same size (anatomically) in the systemic and the pulmonary circulation will result in a shunt of blood through the systemic opening several times greater than through the pulmonary bypass. The effect on cardiac output is apparent.

Attempts to measure the resistance to flow offered by the pulmonary arteriovenous shunt have been made, especially by Friedlich, Bing, and Blount.¹⁵ Conclusions reached by them are open to some question inasmuch as the sum of the resistances (shunt resistance and remaining pulmonary resistance) was greater than the measured total pulmonary resistance. The error in the mathematics seems to be in their assumption that $\text{shunt resistance} = \frac{\text{Mean PA-PV}}{\text{Shunt flow}}$ and

that remaining pulmonary resistance =

$\frac{\text{Mean PA-PV}}{\text{Effective pulmonary flow}}$

In each formula the mean PA pressure was recorded, but the PV pressure was assumed. This assumption, that the PV pressure indicated the distal resistance in both the shunt and the normal lung, is probably not justified.

SUMMARY

A case of pulmonary arteriovenous fistula, identified by angiogram and cured by surgery, is presented.

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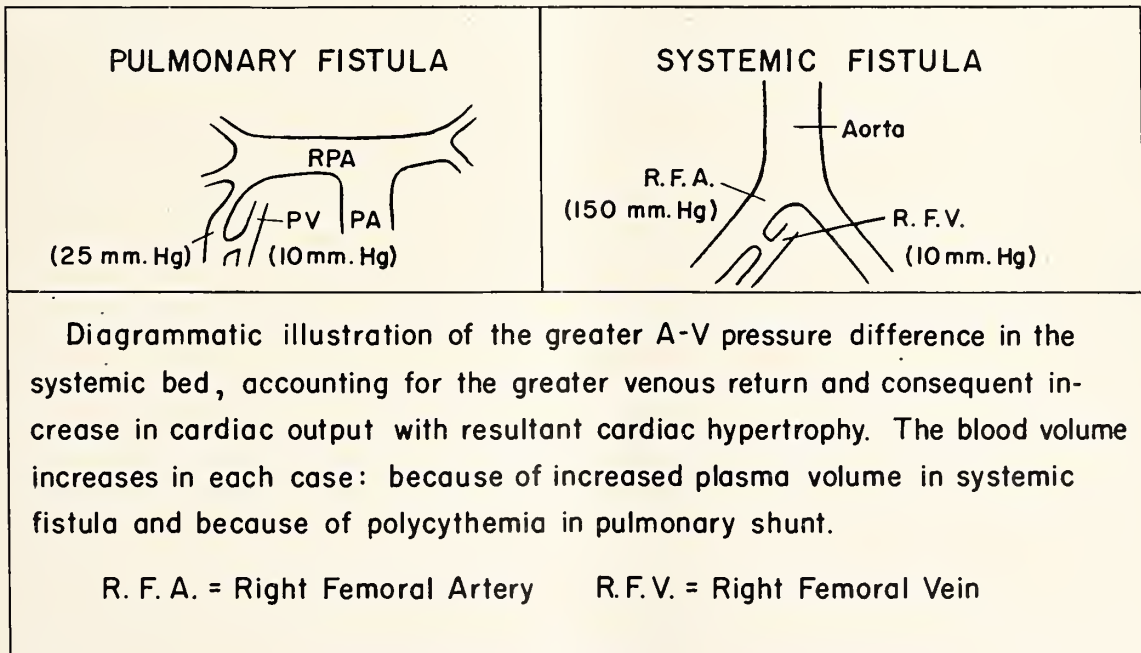


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THE MONTH IN WASHINGTON

Editor's Note. The following summary of Washington news was prepared by the Washington office of the A.M.A. for distribution to state and regional medical journals.

A bill that is not a part of the official Eisenhower health program is causing a stir in Congress.

The bi-partisan measure would provide \$90 million dollars to be spent over three years to help construct and equip non-federal medical research and laboratory facilities. Often in the past five years efforts have been made to get Congress to set up various huge new research programs pointed at one disease and calling for direct federal operation of the project. Without exception they have been turned down, Congress deciding that the existing National Institutes of Health are the proper vehicles for such all-federal research.

The bill that Congress now is interested in takes a different approach. It would have the federal government "get in and get out," a system used successfully in the Hill-Burton hospital construction program. Grants would go to nonprofit hospitals, medical schools, medical laboratories and like institutions, and the institution itself would have to match the federal money. Once the particular construction had been completed and equipped, the federal government would relinquish all control or influence over the project, as under Hill-Burton. Unlike the Hill-Burton plan, the grants would go directly from the U. S. to the project.

The Senate sponsors of this bill carry more than ordinary weight within their own parties. They are Senator Lister C. Hill (D., Ala.), who not only is chairman of the Labor and Public Welfare Committee but also heads the subcommittee that passes on

most health appropriations, and Senator Styles Bridges (R., N.H.). The latter has added prestige as chairman of the Senate Republican Policy Committee. The House sponsor is Rep. Percy Priest (D., Tenn.), chairman of the Interstate and Foreign Commerce Committee, which like Senator Hill's committee is in charge of most health bills.

The reinsurance bill, again the center of controversy, is much the same as last year's bill, but singles out certain areas where the administration believes reinsurance would be particularly helpful. They are the coverage of rural families, greater protection for low-income families (including home and office calls), and the insurance of major medical costs. The new bill also makes some technical changes designed to assure that the federal government does not intend to regulate the insurance industry.

As introduced, the Defense Department's bill for more medical care for military dependents had no surprises at all. It is exactly the same bill offered last year. Efforts had been made to write in some compromises, but these were given up for the time being. The major question, as it has been from the start, is whether most dependents are to get their medical care from an insurance plan such as is proposed for other U. S. employees and their dependents, or are to be cared for by uniformed physicians in military hospitals.

A surprise Eisenhower request is that this country lift its statutory restriction on the amount of money U. S. may contribute toward the World Health Organization. Under present law the U. S. may not pay more than \$3 million annually. The administration wants this ceiling lifted to \$5 million.

Congress currently is deciding how much money to allow for health programs for the next fiscal year, starting July 1. Although the administration requested for Mrs. Hobby's department only about what it is spending this year (\$2 billion), the budget for Public Health Service was upped about \$77 million. Most of the research institutes are scheduled for substantial increases.



One of the great modern-day teachers of both scientific medicine and character building was Sir William Osler. Famous for his contributions to medical literature, he is also revered for the sound advice he gave his many students during his active years. In one of his famous addresses, "Aequanimitas," he described two characteristics which young physicians could profitably cultivate. These two important qualities—imperturbability and equanimity—cannot be described better than by quoting from the address as it was given to a graduating class in 1889.

"Imperturbability means coolness and presence of mind under all circumstances, calmness amid storm, clearness of judgment in moments of grave peril, immobility, impassiveness, or to use an old and expressive word, *phlegm*. It is the quality which is most appreciated by the laity though often misunderstood by them; and the physician who has the misfortune to be without it, who betrays indecision and worry, and who shows that he is flustered and flurried in ordinary emergencies, loses rapidly the confidence of his patients. . . . The first essential is to have your nerves well in hand. Even under the most serious circumstances the physician or surgeon who shows in his face the slightest alteration, expressive of anxiety or fear, has not his medullary centres under the highest control, and is liable to disaster at any moment. . . .

"In a true and perfect form, imperturbability is indissolubly associated with wide experience and an intimate knowledge of the varied aspects of disease. . . . From its very nature this precious quality is liable to be misinterpreted, and the general accusation of hardness, so often brought against the profession, has here the foundation. Now a certain measure of insensibility is not only an advantage, but a positive necessity in the exercise of a calm judgment, and in carrying out delicate operations. Keen sensibility is doubtless a virtue of high order, when it does not interfere with steadiness of hand or coolness of nerve; but for the practitioner in his working-day world,

a callousness which thinks only of the good to be effected, and goes ahead regardless of smaller considerations, is the preferable quality.

". . . There is a mental equivalent to this bodily endowment, which is as important in our pilgrimage . . . a calm equanimity. . . . How difficult to attain, yet how necessary, in success as in failure. . . . One of the first essentials in securing a good-natured equanimity is not to expect too much of the people amongst whom you dwell . . . in matters medical the ordinary citizen of today has not one whit more sense than the old Romans . . . restrain your indignation when you . . . discover accidentally a case of Warner's Safe Cure in the bedroom of your best patient. It must needs be that offences of the kind come; expect them, and do not be vexed.

"It has been said that in prosperity our equanimity is chiefly exercised in enabling us to bear with composure the misfortunes of our neighbours. Now while nothing disturbs our mental placidity more sadly than straitened means . . . I would warn you against the trials of the day . . . of large and successful practice. Engrossed . . . in professional cares . . . you may find, too late, with hearts given away, that there is no place in your habit-stricken souls for those gentler influences which make life worth living.

". . . for some . . . there is in store disappointment. . . . Stand up bravely, even against the worst. . . . There is a struggle with defeat which some will have to bear, and it will be well for you in that day to have cultivated a cheerful equanimity. . . . Even with disaster ahead and ruin imminent, it is better to face them with a smile, and with the head erect, than to crouch at their approach. And if the fight is for principle and justice, even when failure seems certain, where many have failed before, cling to your ideal. . . .

"It has been said that 'in patience ye shall win your souls,' and what is this patience but an equanimity which enables you to rise superior to the trials of life?"—O.R.C.

PRESIDENT'S PAGE

DEAR DOCTOR:

This morning the officers of your Society, one of the delegates to the American Medical Association, and Mr. Ebel met with a Senate committee to discuss the osteopathic bill before the Senate.

We reiterated our stand as stated in the resolution passed by the House of Delegates and by documentary evidence were able, we feel, to refute many of the claims which had been made by supporters of this bill. I hope by the time you receive this letter evidence of our effectiveness will be apparent.

There are times I feel that as individual citizens our support and efforts should extend beyond the immediate field of medical practice and public health. I am thinking specifically of the Right to Work Bill now in committee which, in my estimation, will be another support in a strong secure democracy.

I feel that this bill is a strengthening of the Bill of Rights and provides protection against abuses that have been too evident in the immediate past.

I urge you all—your families—your friends to support this bill by adequately informing your legislators as to what you think. I have yet to meet the senator or representative who does not appreciate an honest opinion of your views. You should not deprive him of your support in such an important issue.

Yours very truly,

Murray C. Eddy, M.D.

EDITORIAL COMMENT

UNIVERSITY OF KANSAS SCHOOL OF MEDICINE ISSUE

It is with pleasure and satisfaction that the Editorial Board presents this, the ninth annual University of Kansas School of Medicine issue of the JOURNAL. By so naming the issue, the Board hopes to express its deep appreciation for the support given the JOURNAL by the school all through the year.

In addition to numerous papers for the scientific section, the school regularly provides a series of Clinicopathological Conferences and Tumor Conferences in alternating issues of the JOURNAL. It also selects 15 theses from among those written by fourth year students at the school to provide a selection so that one may be published each month.

In other ways too physicians of the state are in debt to the medical school. Through postgraduate courses offered on the campus and circuit courses carried throughout the state, physicians have an opportunity to keep abreast of advances in medicine. Their attendance at such courses is adequate proof of the value of such a program.

We are fortunate in this state that a good relationship exists between the University of Kansas School of Medicine and The Kansas Medical Society. May we continue to work together in the future for the benefit of both organizations and the improved health of all in Kansas.

SIMPLIFIED INSURANCE FORMS

With an increasing percentage of patients having various types of health insurance, and with each insurance company having its own forms for submitting claims, the physician of today has had forced upon him the necessity of completing more and more forms which seem to be growing more and more complicated. Each company seems to vie with others in requesting detailed information, much of which the physician realizes is not at all pertinent to the case in question. However, he is cautioned to "fill in all spaces," often "as a courtesy to your patient."

The physician faced with this annoying problem will welcome the simplified form for submitting surgical claims which has been devised by a special committee of the American Medical Association. This has already received the approval of companies writing about 85 per cent of the group accident and

health premium volume in the United States, and we hope will soon be in common use. Medical record librarians were able to obtain approval of a simplified but adequate "standard form" for such reports to insurance companies by hospitals, and it is gratifying to see that there is hope for simplification of surgical claims.

A vote of appreciation and confidence to the Committee on Prepayment Medical and Hospital Service.

ANNUAL MEETING IN HUTCHINSON

The enthusiasm of the Reno County Medical Society for its role as host to the 96th annual meeting of The Kansas Medical Society is clearly evident in the preparations that are being made to provide an outstanding program, an expanded list of scientific and technical exhibits, a series of entertaining social affairs, and a one-day schedule of sports events.

The dates, as reported earlier, are May 1 through May 5.

With the new Baker Hotel now receiving guests, Hutchinson can offer accommodations for all who attend the session. The air conditioned Hutchinson Arena affords ample space for general sessions, specialty society meetings, exhibits, and luncheons. The Prairie Dunes Golf Club and the Arkansas Valley Gun Club provide facilities for sports.

This year, for the first time, a morning has been set aside for meetings of various specialty societies. This will eliminate the conflict that has sometimes resulted in the past when specialty societies, in order to meet at all, were forced to plan scientific and business sessions at a time scheduled also for the general program, meetings of the House of Delegates, or social events.

Details of the program will be published in the April issue of the JOURNAL. For the present, in order to provide an opportunity for physicians to make plans for attending, the following chronological outline is presented:

HOTEL RESERVATIONS

All hotel reservations for those attending the 96th annual session of The Kansas Medical Society are being made by the Chamber of Commerce, Hutchinson. All requests for reservations received by The Kansas Medical Society or by the Reno County Medical Society will be referred to the Hutchinson Chamber of Commerce, so those wishing to reserve accommodations will avoid delay by writing directly to the Chamber of Commerce office.

Sunday, May 1—Meeting of board of directors of Blue Shield; first session of annual meeting of Kansas Medical Assistants' Society.

Monday, May 2—Sports events and tournament banquet for all physicians; all-day session for members of the Kansas Academy of General Practice; final sessions for members of the Kansas Medical Assistants' Society.

Tuesday, May 3—General scientific sessions for members of The Kansas Medical Society during the morning; round table luncheon at noon; symposium, "How to Keep the Medical and Surgical Patient Alive," during the afternoon; dinner and evening meeting of the House of Delegates; beginning of annual meeting of Woman's Auxiliary to The Kansas Medical Society.

Wednesday, May 4—General sessions for all members of The Kansas Medical Society during the morning; round table luncheon at noon; symposium, "Functional Disorders," during the afternoon; annual banquet and evening entertainment; continuation of meeting of Woman's Auxiliary to The Kansas Medical Society.

Thursday, May 5—Scientific and business sessions of all specialty organizations; noon luncheon and second meeting of the House of Delegates.

Although in-state speakers will appear on a number of programs sponsored by specialty societies, speakers from outside the state, known throughout the country for their ability in the different fields of medicine, will present the general sessions and symposia. The list includes the following:

Frank F. Allbritten, Jr., M.D., Kansas City, Surgeon

Frederick R. Carriker, M.D., Denver, Ophthalmologist

Thomas Flint, Jr., M.D., Richmond, California, Internist

Edward C. Hughes, M.D., Syracuse, New York, Obstetrician and Gynecologist

John M. Lyon, M.D., Denver, Psychiatrist

Thomas E. Machella, M.D., Philadelphia, Internist

Walter S. Priest, M.D., Chicago, Internist

William E. Ricketts, M.D., Park Forest, Illinois, Internist

Philip Thorek, M.D., Chicago, Surgeon

Theodore E. Walsh, M.D., St. Louis, Otolaryngologist

For a great many years, Topeka and Wichita were the only cities in Kansas which offered accommodations for a meeting as large as the annual session of The Kansas Medical Society. Then, with the completion of the Town House Hotel, Kansas City was in position to serve as host. Now Hutchinson is added to the list of host cities.

The Reno County Medical Society, with only 46 members and with only limited help from outside, is arranging a meeting which promises to be one of the most interesting and most informative ever planned. Credit is due all who are participating, especially the following committee members:

Scientific Program: Doctors Victor R. Moorman, George E. Paine, Robert W. Fernie, Lorin E. Dickelmann, Edward L. Fitzgerald, Carlton H. Lee, DeMerle E. Eckart, John B. Jarrott, Robert Sohlberg, Jr., of McPherson, Francis A. Thorpe of Pratt, Orlin W. Longwood of Stafford, and Alfred S. Hawkey of Newton.

EENT Program: Doctors William M. Scales and Boyd L. Greever.

Commercial Exhibits: Doctors John N. Blank, Eldon S. Rich of Buhler, Louise F. Richmond, Gordon E. Stone, George E. Paine, and Victor R. Moorman.

Medical Assistants: Dr. George A. Chickering.

Golf and Skeet: Doctors Robert A. Crawford, Edward L. Fitzgerald, Gordon E. Stone, and Carlton H. Lee.

Arrangements on Housing: Doctors Edward L. Fitzgerald and Jack L. Perkins.

Arrangements on Meeting and Transportation: Doctors DeMerle E. Eckart, Harold R. Barnes, Sam Jones, Robert A. Crawford, and Edward A. Heffner.

Special Events: Doctors Robert N. Shears, Erling B. Struxness, and Guy R. Walker.

Entertainment: Doctors Charles A. Boyd, John J. Brownlee, Charles T. McCoy, Clarence W. Hall, Sam Jones, Boyd L. Greever, and Harry E. Blasdel.

Academy of General Practice: Doctors Chester W. Haines, Harold L. Graber, and J. Dale Burger.

Scientific Exhibits: Doctors Robert W. Fernie, E. B. Struxness, Charles DeHaan, John B. Jarrott, and DeMerle E. Eckart.

Auxiliary: Doctors Marion E. Nunemaker and J. Dale Burger.

NEW FCDA PERSONNEL

Announcement has been made of the appointment of Dr. John M. Whitney as director of health services, Federal Civil Defense Administration, and the appointment of Dr. Paul A. Lindquist, a Kansan, as medical officer for Region VI which comprises five states with headquarters in Denver.

A graduate of the University of Kansas School of Medicine, Dr. Lindquist practiced in the state for several years before taking postgraduate work in public health. He has served as a health officer in several localities and recently returned from duty with the U. S. Public Health Service in Greece, Libya, and Germany.

Clinicopathological Conference

CASE PRESENTATION

Dr. Burkey, ENT resident: A 54-year-old Negro male was first seen in the outpatient department at KUMC on August 2, 1954. His chief complaints were dysphonia of eight months' duration and dyspnea for several weeks. The hoarseness seemed to follow an acute cold. Mirror examination of the larynx showed massive edema of the right true and false cords and of the right arytenoid. The right true cord was fixed while the left moved freely.

The patient was admitted to the KUMC hospital on August 8. Past history included gonorrhea at age 17 and removal of a tumor of the rectum at age 13. The tumor type was not determined.

On physical examination, the well developed well nourished Negro man was in moderate respiratory distress with marked dysphonia. Blood pressure was 140/80, pulse 74, temperature 98.2°F. Some suprasternal retraction was present. Laryngeal examination confirmed the findings previously established in the outpatient department.

Laboratory examinations resulted in the following: red blood corpuscles 4,100,000, hemoglobin 13.6 grams per 100 cc., white blood count 5,900 with a normal differential; the urine had 5 to 7 pus cells per high power field and occasional waxy, cylindroid and granular casts; urine test for bile was positive and fermentation slightly positive; VDRL was reactive with 256 Kolmer units and 64 Kahn units; nonprotein nitrogen 30.9, blood sugar 95 mgm. per 100 cc.; total protein of blood was 7.05 with serum globulin 2.4 and serum albumin 4.57. No acid-fast bacilli were found in the sputum.

During the hospital course of this patient, a tracheotomy was done on August 9. This immediately relieved the respiratory distress. Under local anesthetic, the larynx was visualized by direct laryngoscopy. The lesion appeared much as it had before except that it extended to the midline in the interarytenoid area. The left false cord was edematous.

Biopsy was done on the right arytenoid area, and the microscopic report was acute and chronic laryngitis. Four days later, esophagoscopy was done and no postcricoid tumor was seen. Direct laryngoscopy was repeated at the same time, and three more biopsies were taken from the right false cord. A consultant from the department of medicine predicted that the patient was a good surgical risk.

A wide field laryngectomy with right radical

neck dissection was done August 25. The following morning, the dressings were found to be soaked with coffee colored liquid. It was assumed that the patient had regurgitated the tube feedings. They were discontinued and the patient was fed intravenously. Frequent tracheal suction was carried out with a return of the same brown fluid. The following day a small tube feeding was given with regurgitation. The patient seemed to be improved. That afternoon regurgitation occurred again, and it was necessary to return to intravenous feeding and gastric suction.

In spite of this, the patient's condition became worse. Temperature rose to 101.5°F. Because of an apparent waning in strength, tube feedings were started again August 26. Coarse rales were audible throughout both lung fields. The patient became unresponsive the following day. On August 28 the fever reached 104°F. Marked respiratory distress occurred. At 5:00 a.m. the blood pressure dropped to 90/0. It rose to 110/50 at 6:15 a.m., but the patient died at 6:25 a.m.

Question: What medication did the patient receive while in the hospital?

Dr. Burkey: Procaine penicillin in the dose of 1,200,000 units daily was given, changed to aqueous penicillin 600,000 units every three hours during the two days preceding death.

Question: Had there been a history of syphilis?

Dr. Burkey: It was not mentioned.

Question: Was there a history of gastric ulcer?

Dr. Burkey: No.

Question: How soon were tube feedings started postoperatively?

Dr. Burkey: There were no tube feedings the day of surgery. Tube feedings in small graduated doses began the next morning. The day following surgery, a total of 720 cc. was given before being stopped when regurgitation appeared. Tube feedings the following day totaled 90 cc. before being stopped. The next day, 1275 cc. were given. The following day only 60 cc. were given.

Question: Were any electrolyte studies made?

Dr. Burkey: No, only a nonprotein nitrogen.

Question: Was the patient ever treated for syphilis?

Dr. Burkey: We think not. If he was, the treatment was bismuth and arsenic.

Question: What was his occupation?

Dr. Burkey: A garbage man.

Question: How much did he smoke?

Dr. Burkey: A heavy smoker.

Question: Was the entire esophagus visualized?

Dr. Burkey: Yes.

From the University of Kansas Medical Center. Edited by Glen R. Shepherd, M.D., and Mahlon Delp, M.D., from recordings of the conference participated in by the departments of medicine, ENT, radiology, pathology and the junior and senior classes of medical students.

Question: Did he develop cough postoperatively?

Dr. Burkey: He undoubtedly coughed due to irritation of the trachea after surgery. I don't remember the amount of cough.

Question: Were there palpable nodes in the neck?

Dr. Burkey: No.

Question: Was there any history of tuberculosis?

Dr. Burkey: There was a family history of tuberculosis. The father died of "consumption."

Question: Were skin tests positive?

Dr. Burkey: Both tuberculosis and histoplasmin skin tests were positive.

Dr. Delp (chairman): Simpson, will you show us the electrocardiograms?

Albert P. Simpson (fourth year medical student): The electrocardiograms were normal except for ventricular premature contractions.

Dr. Dimond (professor of medicine): I concur. The auricular contractions continued normally through the ventricular premature contractions.

Dr. Delp: Wood, will you show us the x-rays?

Ralph H. Wood (fourth year medical student): These x-rays were taken the day the patient was seen in the outpatient department, August 3. The soft tissues of the chest do not appear abnormal. The heart is within normal limits. Costophrenic angles are clear. The right diaphragm is considerably elevated over the left. There is no Ghon complex. An opacity in the right apex could be an old healed tuberculous lesion. The trachea is in the midline. The chief findings in this chest film are the elevated right diaphragm and the old tuberculosis in the right apex.

A lateral chest film made the same day shows the aorta clearly outlined with just a possibility of aortic aneurysm. The right diaphragm elevation suggests either adhesions from an old pleurisy or paralysis from phrenic nerve involvement.

A chest film taken August 24, one day postoperatively and four days prior to death, shows essentially the same except there was then a bilateral infiltration of the lower lobes which I would interpret as bronchopneumonia. It appears fairly equal on both sides.

A flat plate of the abdomen was taken the following day. I can't see very much on it. I think the architecture of the pelvis is normal. I can't outline the kidneys or liver.

Chest films taken on August 25 again show elevation of the right diaphragm compared to the left. I don't think the liver is enlarged. There is no air under the diaphragm.

Dr. Delp: Dr. Youngstrom, do you have any comment?

Dr. Youngstrom (radiology): This case presents several possibilities. There was an increased density, particularly visible in the lateral film, in the right

lung field anteriorly continuous with the liver shadow. This shadow is of considerable interest and needs to be explained. One would have to consider atelectasis in a segment of the lung, or a nodule of the liver pushing up and overlapping the heart and giving this type of shadow. If this were all liver, one would expect that the density here would not be demarcated as sharply as we find it. So we are forced to conclude there could very well be a segment of atelectasis in this area of the right lung.



Figure 1. X-ray of chest, lateral view, showing unusual shadow continuous with liver shadow as well as high gas bubble in front of liver.

However, there is also a gas shadow here—it isn't clearly shown on the film—and this is pretty far forward, up above, and it's on the right when we compare with the other films. So that means there is gas apparently in the colon high in front of the liver. That does not usually occur except in cases of small livers or in cases of intestinal obstruction. It is called interposition of the colon segment above the liver. It usually comes way up under the diaphragm, and here we see it only anteriorly. The last anteroposterior film taken before death shows a bronchopneumonia.

Dr. Delp: This would seem to be a straightforward case in which the man was apparently healthy in many respects except for some symptoms of an isolated portion of his anatomy. He had hoarseness which had continued for a number of months. He came to the hospital. He had several biopsies made. He was operated upon and did quite well. Then something rather serious happened to the patient and he died. We are obligated to explain just what happened and why it happened. One controversial point which is not satisfactorily ex-

plained in the protocol is the serology with quite a high titer of Kolmer units. I expect that explanation on the part of those who are going to discuss it.

Mrs. Gruendel, will you begin the discussion?

DIFFERENTIAL DIAGNOSIS

Virginia Gruendel (fourth year medical student): Of particular significance in this case is an eight months' history of dysphonia. The most important physical finding is that of an edematous and fixed right vocal cord.

There are three major types of disorders which may produce dysphonia. These are: (1) intrinsic diseases of the larynx; (2) injury to or pressure on the recurrent laryngeal nerve; and (3) hysteria. In view of the fact that this patient did have positive physical findings, we need not consider hysteria as a basis for dysphonia here.

Now let us consider numerous disorders which may involve the recurrent laryngeal nerve and produce dysphonia. These include cardiac enlargement; aortic aneurysm; tumors, particularly carcinoma of the thyroid, carcinoma of the esophagus, superior sulcus tumor of the lung, or mediastinal tumors. The nerves also may be injured during a thyroidec-tomy. I believe we can rule out all these diseases since we do have direct visualization of a lesion on his right vocal cord. We also do not have any significant physical findings outside of the larynx which would make us consider any of these disorders very seriously.

Now let us consider the intrinsic diseases of the larynx which may produce dysphonia. These include acute inflammatory diseases such as acute catarrhal laryngitis, a diphtheritic laryngitis, or the acute edema which may follow aspiration of a foreign body. These are acute processes. They produce a generalized type of involvement of the larynx and rarely if ever produce fixation of the vocal cord. Therefore, I feel that they should not be considered seriously.

There are two types of chronic granulomatous lesions of the larynx which are difficult to distinguish from a neoplastic lesion. These are tuberculosis and syphilis. According to Cecil's *Textbook of Medicine*, tuberculosis of the larynx is almost always accompanied by active pulmonary disease. The acid-fast organism is readily isolated, and the patient usually has significant pulmonary findings. Also these patients usually complain of pain in the throat. I do not consider that tuberculosis could explain all of this patient's picture.

Syphilis of the larynx is also difficult to distinguish from a tuberculous or neoplastic lesion. About the only way we can make a positive diagnosis of syphilitic gumma is by tissue biopsy, or by watching the lesion disappear under intensive specific therapy. This patient did have a strongly positive serology. I

think we cannot thoroughly eliminate syphilitic gum-mata upon the basis of the information in the protocol, but I consider such a diagnosis improbable.

There are several tumors of the larynx which may produce dysphonia. Of the benign tumors, the more common ones are polyps, papillomas, lipomas, or hemangiomas. Most benign lesions have a characteristic gross appearance, and the patient is usually cured by local excision.

Malignant tumors of the larynx may produce dysphonia. In any patient over 40, particularly males, who present with a complaint of dysphonia, one should seriously consider malignancy. Approximately 90 to 95 per cent of such lesions are of the squamous cell type. They usually arise in the anterior part of the vocal cord where the lymphatic drainage is rather sparse. They will produce only the symptom of dysphonia and will not metastasize early. They later extend to the posterior part of the cord and the surrounding tissues of the larynx, making the patient's prognosis much poorer. I think this patient had a malignancy of the larynx and that, from a statistical standpoint, it most likely was of the squamous cell type.

This patient was subjected to a wide field laryngectomy followed by a right radical neck dissection. During the first postoperative day his dressings were found to be soaked with a brownish liquid. This same coffee colored material was aspirated from the trachea. The patient later developed rales in the posterior lung fields, and his temperature rose steadily until the time he died.

I think the most logical conclusion one can draw is that the patient developed an aspiration pneumonia terminally. The most likely mechanism of aspiration could be by the production or development of a fistulous tract between the postoperative stump and the trachea. If the patient regurgitated only a small amount of gastric contents, the hydrochloric acid would readily break down a suture line and help the fistula formation. I think that is what happened in this patient. I think also that this patient probably had esophagitis from his repeated intubations.

In summary, I feel first that this patient had a malignancy of the larynx, and it most likely was squamous cell carcinoma; second, that this patient developed aspiration pneumonia; third, that he had an esophagitis and possibly he bled from an esophageal erosion or peptic ulceration. That's speculation.

Dr. Delp: Before you completely relax, I would like to know why you discarded the diagnosis of syphilis so quickly?

Mrs. Gruendel: The only way you could make a positive diagnosis is by tissue biopsy or watching the tissue response to antibiotic therapy.

Dr. Delp: I assume in this specific instance you took for granted that laryngectomy is not the com-

mon method of treating syphilis of the larynx. Is it possible this patient died of suffocation?

Medical student: No, I think in view of the regurgitation of coffee colored fluid and the x-rays showing terminal bronchopneumonia, the cause of death is explained.

Dr. Delp: You think he died of toxemia associated with bronchopneumonia.

Medical student: Yes.

Dr. Delp: We have noted here that this patient received a combination of penicillin and achromycin. Is that a proper combination of antibiotics for someone who had an infectious process such as Mrs. Gruendel suggested?

Medical student: I don't think I would have used it. I wouldn't say it was improper. I would have used a combination of penicillin and streptomycin.

Dr. Delp: Why would you do that?

Medical student: Some of the broad spectrum antibiotics are synergistic and some combinations are antagonistic. Penicillin and streptomycin are synergistic. I would have given streptomycin if I thought there was any possibility of aspiration pneumonia.

Dr. Delp: Dr. Proud, I am going to call on you after the pathologists have presented their material. Right now I'd like to ask Dr. Bolinger, who saw this patient and pronounced him a suitable individual for surgery, for his evaluation of this situation. You saw the patient early; you did not see him later. You knew nothing about any difficulties that arose later.

Dr. Robert Bolinger (medicine): Well, when we first saw this patient, as Mrs. Gruendel pointed out, we were faced with the problem of a high serologic titer, and we know it is difficult to differentiate luetic lesions from other types of lesions of the larynx. At that time we got a history of inadequate previous treatment, and I believe we recommended that the easiest way to differentiate this from the neoplastic lesion would be by a course of penicillin.

I assume that before surgery was carried out, lues was excluded in this patient. I did not see the patient during the postoperative period. Apparently it was featured mostly by persistent vomiting. If you want to start backwards and go forward, this persistent vomiting probably gave rise to the bronchopneumonia which he had. As to the cause of persistent vomiting following surgery, there are several possibilities. The most likely cause of that would be electrolyte imbalance of some type or another. Potassium deficiency or a low sodium syndrome often produces it.

I do not know whether bowel sounds were heard after surgery. Certainly bowel sounds should have been heard before the patient was allowed to have food by mouth. I suspect that they were not heard

because such vomiting as this patient had, including a brown watery type of fluid, is frequently seen where there is some type of paralytic ileus.

We do not have available any abdominal studies on this patient, either before or after surgery. From the radiological standpoint, the suggestion that Dr. Youngstrom made, that the colon appeared distended in the chest x-ray film, probably should have received further investigation if it was reported then. There is no reason to think this patient had anything wrong with his abdomen before surgery. Barring unusual coincident lesions in the abdomen, I think this patient probably did not have primary abdominal disease and that he died of aspiration pneumonia.

PATHOLOGY REPORT

Dr. Kay Williams (pathology): The first biopsy specimen received from this patient revealed acute and chronic laryngitis, and the second specimen showed squamous cell carcinoma. The third surgical specimen consisted of the entire larynx and the internal structures of the right neck. Examination of the larynx revealed white granular tumor tissue which almost entirely replaced the right vocal cord and extended anteriorly across the midline for a distance of 3 or 4 mm. It extended superiorly to the aryepiglottic fold and inferiorly to invade the cricoid cartilage. No tumor was found in structures from the right neck.

At autopsy the pertinent gross findings were in the neck and chest. A U-shaped surgical incision was found on the anterior aspect of the neck, beneath which was a tracheostomy opening. Upon opening the incision, one looked directly down into the surgical wound upon the esophagus and pharynx. There was an opening measuring approximately 4 cm. in length and 2 cm. in width in the anterior wall of the pharynx at the point where it had been sutured at the time of surgery. The tissue surrounding the opening was extremely soft and necrotic. The esophagus revealed a markedly congested mucosa with some superficial ulceration. The trachea was sutured to the subcutaneous tissue and surrounding muscle and fascia. The tracheal and bronchial mucosae were extremely congested and edematous with some ulceration. The only other finding of importance in the neck was the left lobe of the thyroid, the capsule of which appeared necrotic.

In the chest, 100 cc. of serous fluid was found in the right pleural space. There were thin fibrous adhesions between the lobes of the lung on the right and between the right lung lobe and the diaphragm. The lungs weighed 2,700 grams, which is considerably heavier than normal. On section, a confluent bronchopneumonia was found. This was a rather homogeneous lesion that did not seem to be any

more severe in any one part of the lungs than in another. There was a calcified nodule in the right upper lobe, as was seen on x-ray.

The liver weighed 1,775 grams, which is perhaps a little heavier than usual in this size patient.

Dr. Jacob K. Frenkel (pathology): I don't suppose anyone was surprised by the gross findings. We will try hard to show you some interesting things later which were not suspected. Slides of the first biopsy taken on August 9 showed acute and chronic inflammation but no metaplasia or carcinoma. The second biopsy yielded tissue of the same nature as the main lesion found on surgical resection of the entire larynx. It was a squamous cell carcinoma arising from laryngeal epithelium which invaded the laryngeal wall (Figure 2). However, it appeared

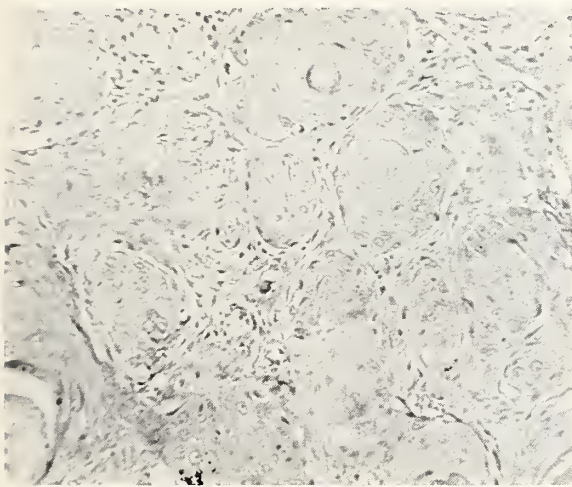


Figure 2. Squamous cell carcinoma of larynx. Magn. x210

as if confined to the larynx, and there is little likelihood that the phrenic nerve was involved.

The tenting of the diaphragm was on another basis. Other lesions in this area were as a result of resection with ulceration of the trachea and pharynx and development of the sinus tract. There were several ulcers in the esophagus. The thyroid gland showed necrosis of the acini where they bordered the sinus tract. The ultimate cause of death was bronchopneumonia.

Miscellaneous findings included a small splenic infarct, following an old thrombosis of the splenic artery which became recanalized. We observed some islets of Langerhans outside of the main acinar tissue of the pancreas. One got the impression that part of the exocrine portion of the pancreas had become obstructed, leading to pancreatic fibrosis with only isolated islands remaining. Some of the adrenal cortex was necrotic and replaced by fibrous tissue. In other areas there were regenerated nodules of adrenal cortical tissue. There did not appear to be a deficiency

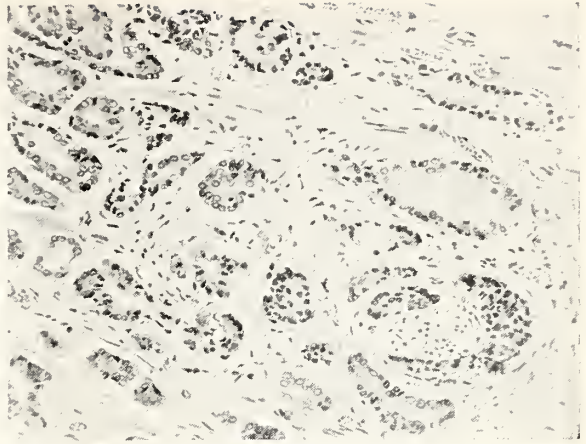


Figure 3. Occult adenocarcinoma of prostate gland with perineural invasion (lower right) x210

of adrenocortical cells. The kidney showed areas of inflammation and fibrosis resulting from destruction of the renal parenchyma due to arteriolonephrosclerosis.

Finally, we found another carcinoma, a carcinoma of the prostate gland. This is common in males of this age group (54). It was rather small and was not observed grossly at the time of autopsy. That this type of carcinoma can be invasive was shown by a small nerve that had been invaded by tumor (Figure 3).

It should be mentioned that in spite of the positive serological test for syphilis, there were no stigmata of syphilis in this subject. The aorta was in good shape. There were neither gummas nor lesions in the meningeal vessels. This, of course, is not uncommon since about 20 per cent of cases of syphilis leave no late lesions. On the other hand, we must consider that this man might have had syphilis of recent duration and that not enough time had elapsed for late lesions to develop.



Figure 4. Bronchopneumonia x210

To sum it up, this man had a laryngectomy and tracheotomy. The tracheal stump was tied anteriorly to the deep neck muscles. As far as we know, it did not come directly to the skin. A fistula developed in the pharynx. There was regurgitation of gastric contents, some of which presumably went down this fistulous tract which ended close to the tracheal stump. There was probably aspiration. Bronchopneumonia developed (Figure 4). The organisms which were susceptible to penicillin and achromycin were suppressed, leaving *Pseudomonas*, *Staphylococcus aureus*, and *Aerobacter aerogenes* to multiply in the lungs. Bronchopneumonia due to these organisms resulted in pulmonary edema with suffocation.

CLINICAL DISCUSSION

Dr. Delp: Dr. Proud, we'd like to have some comments from you concerning first of all the risks involved in this type of surgery, and secondly, some comments about the treatment of carcinoma of the larynx.

Dr. G. O. Proud (professor of otorhinolaryngology): Obviously, this isn't the usual outcome of laryngectomy or we wouldn't do it very often. Some remarks concerning the usual course might be apropos. If the patient is feeling reasonably well at the time of surgery, he is allowed out of bed for a few minutes the following day, and the ambulation time is gradually increased on subsequent days back to full activity.

Intravenous and subcutaneous feedings are given for 24 hours, as a rule, with tube feedings started the day after surgery. The feeding tube is ordinarily removed on the 10th postoperative day, and it will be no surprise that fistula formation is extremely common. It occurs in approximately 50 per cent of cases.

Fortunately, however, most of the fistulae accommodate us by discharging into the neck instead of into the tracheal tube. On reinsertion of the feeding tube and pressure dressings, the fistula ordinarily closes spontaneously within a week. It does no good to attempt repair of the fistula at this time; the tissues are usually friable and difficult to work with.

The second complication of any frequency is pneumonia, which is usually of lobar type. It is unusual for a patient to develop aspiration pneumonia—this is the first I've seen. I would say approximately two or three per cent will get lobar pneumonia. The only other complication worthy of note is hematoma, which is rare and occurs in perhaps one per cent of the cases and will require a secondary opening of the closure.

As for management of carcinoma of the larynx, much is written today as to the advantages of x-ray therapy and surgical therapy. Obviously with lesions which are found early and involve only the

central portion of one true cord, in which case they are known as intrinsic lesions, the incidence of long time arrest is extremely high either by surgery or by irradiating such a lesion. Various reporters will quote 70 to 90 per cent for 10-year arrest, depending upon the degree of euphoria of the reporter.

If the lesion extends to the anterior commissure or involves the arytenoid or becomes intrinsic in the epiglottis, surgical treatment is usually resorted to, although there are those who report glowing results with x-ray therapy.

There are good results from both x-ray and surgical therapy for cancer of the larynx. I think most radiologists will tell you that very high lesions, such as epilaryngeal lesions, and very low ones, such as epiglottic lesions, carry a gloomy prognosis by x-ray and are better treated by surgery. This was a rather high lesion and involved the false cords and the arytenoid.

Dr. Delp: Dr. Youngstrom, do you have any comments with regard to therapy?

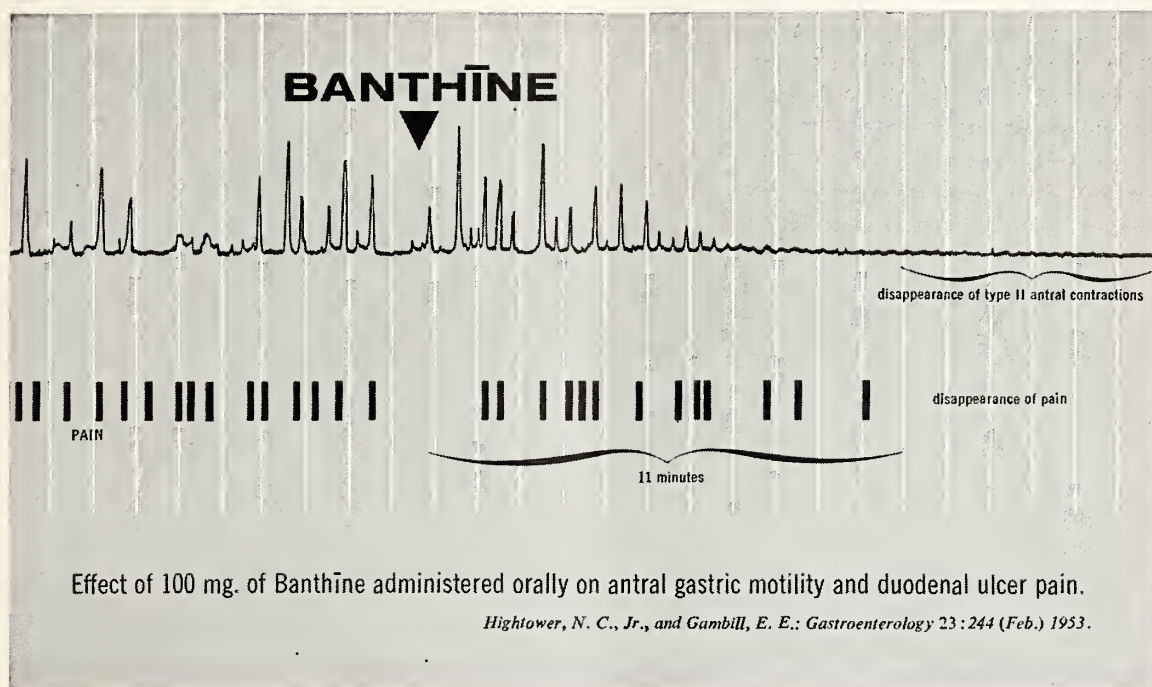
Dr. Karl Youngstrom (radiologist): I think Dr. Proud has covered this satisfactorily, and we have no disagreement about the problem. We frequently get cases to treat with x-ray therapy, however, that the surgeons have refused, so you can finish the story from that angle. Radiologists seldom get the early cases because they are so amenable to surgery. There are a few places where experiments are being done with controlled studies comparing the effects of radiation and surgery on early lesions, by dividing cases between the two services. Maybe some day we'll have more accurate information from these studies. The main consideration usually is that the voice is preserved with x-ray therapy. However, they are both radical treatments, and when you treat cancer with x-ray, it's a radical treatment.

Dr. Delp: Do you think x-ray therapy really is free from serious complications in this group of patients?

Dr. Youngstrom: Well, I haven't had any fatalities from x-ray treatment, but there are complications and they sometimes require surgery. Edema of the glottis usually complicated with infection is common. Radiation interferes with defense mechanisms against infection. Tracheotomy frequently is necessary, although not always. There are many patients with carcinoma of the larynx who go through their whole course of radiation therapy without a tracheotomy.

Other complications are development of necrosis of cartilage in the region of the larynx, and there are two main causes for that. One is extension of the carcinoma there in the beginning and spread of infection under the influence of damage from x-ray. The other cause is excessive radiation which will result some years later in necrosis of the cartilage. That usually can be avoided by keeping radiation dosage down to 6000 r.

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Ruffin, J. M.; Texer, E. C., Jr.; Carter, D. D., and Baylin, G. J.: *J.A.M.A.* 153:1159 (Nov. 28) 1953.

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SEARLE

Dr. Dimond: Dr. Delp, I'd like to ask a simple question of Dr. Bolinger. Could this patient's difficulty have resulted in sufficient CO₂ retention to have contributed to his death?

Dr. Bolinger: That would have to be considered. However, I don't think the obstruction he had, at least when I saw him before surgery, was enough to give him increased intratracheal pressure. He didn't have much rib retraction and he had no vocal stridor at all. I'm sure he had anoxia later on, but it was probably from atelectasis of the lung from bronchopneumonia.

Dr. Delp: I think this is an interesting conjecture. One of the reasons I had that x-ray of the chest put back on the screen was that it seemed the patient had rather definite emphysema of the upper lobe which must have been something that developed as a result of the aspiration. Dr. Youngstrom wouldn't say anything about it, so I neglected to mention it. But I have a feeling that both the electrolyte balance and disturbance in oxygen uptake and carbon dioxide elimination must have accounted more than toxemia for this patient's death. I doubt that he died of toxemia from pneumonia.

ACTIVITIES OF MEMBERS

Governor Fred Hall has announced the appointment of the following as coroners for their respective counties: Dr. Niles M. Stout, Lyndon, Osage County; Dr. William K. Walker, Sedan, Chautauqua County; Dr. L. L. Huntley, Washington, Washington County, and Dr. Robert G. Wood, Coffeyville, Montgomery County.

Dr. Neal M. Jenkins, Dr. Maurice Snyder, and Dr. Clarence J. Weber presented a study on "Unusual Complications of Myocardial Infarction" at a meeting of the staff of St. John's Hospital, Salina, last month.

The two hospitals in Hays, Hadley Memorial and St. Anthony's, announce that Dr. Joseph I. Mossberger is now in charge of pathological and clinical laboratories there. Dr. Mossberger, who is a diplomate of the American Board of Pathology, has been in private practice in Denver during the last five years.

Dr. Cora E. Dyck, who has been practicing at the Hertzler Clinic, Halstead, since early in World War

II, has moved to Wichita to specialize in anesthesiology in association with Dr. Ray T. Parmley.

Dr. Mark A. Brawley, Frankfort, has been named health officer of Marshall County.

Dr. Jack A. Haley, who has been practicing in Hanover, went to New Orleans last month to begin a residency in general and thoracic surgery under Dr. Alton Ochsner.

Dr. C. W. Haines, who has been practicing in both Mount Hope and Haven, has announced the closing of his office in Mount Hope to devote his full time to Haven.

Dr. Donald L. Williams, Garden City, has been named health officer of Finney County for a period of one year.

Dr. Franklin D. Murphy, chancellor of the University of Kansas, presided over a symposium on internships at the 51st Annual Congress on Medical Education and Licensure in Chicago last month.

Dr. William W. Abrams, Kansas City, was guest speaker at a recent meeting of the Kansas City (Kansas) Women's Chamber of Commerce. His subject was "Medical Defense Against the Hydrogen Bomb."

Dr. Donald R. Davis completed a three-year fellowship in general surgery at the Mayo Clinic, Rochester, last month and returned to practice in Olathe. He has announced plans to establish an office in Mission when a new medical-dental building is completed there.

Dr. E. Grey Dimond, Dr. Antoni M. Diehl and Dr. Lee H. Leger, all of the University of Kansas Medical Center, participated in a community meeting at the medical school auditorium last month. The subject was "Know Your Heart."

Dr. Robert M. Brooker, Topeka, addressed the West Topeka Rotary Club on February 21 on the subject of "Recent Advances in Heart Surgery."

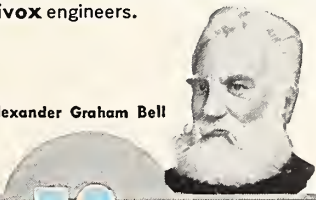


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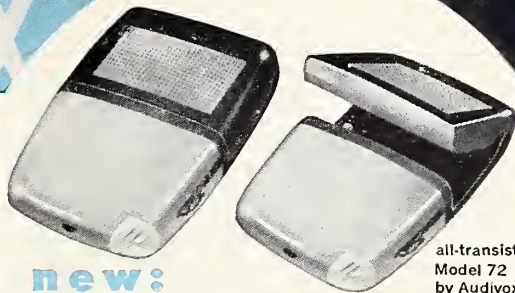
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COUNTY SOCIETIES

Dr. D. J. Lyons was elected president of the Crawford County Medical Society at a meeting held at Pittsburg in February. Dr. J. H. Bena was named vice-president, and Dr. G. W. Pogson was chosen as secretary.

Dr. Edith L. Potter, of the Department of Obstetrics and Gynecology, University of Chicago, was guest speaker at a meeting of the Sedgwick County Society held at Wichita on February 1. Her subject was "Erythroblastosis Fetalis." In the afternoon she conducted an informal clinic at Wesley Hospital with Dr. Edward X. Crowley as moderator.

Officers of the Northwest Kansas Medical Society were elected at a meeting held at Hoxie in February. Dr. E. Ernest Johnson, Jr., Norton, was named president, and Dr. Walter Stephenson, also of Norton, was elected secretary-treasurer.

A meeting of the Shawnee County Society was held at Topeka on February 7. Mr. Harold Schroeder, a tax attorney, spoke on "Taxes, Income, and Gift Estates." Mr. Oliver Ebel, executive secretary of The Kansas Medical Society, discussed bills introduced in the Kansas legislature, and Mr. Rueben M. Dalbec, executive assistant, spoke on social welfare problems.

Dr. Buford Hartman, Kensington, was elected president of the Smith County Society at a meeting held at the home of Dr. V. E. Watts, Smith Center, on January 25. Dr. Robert G. Sheppard, Smith Center, was elected vice-president, and Dr. Watts was named secretary. Dr. Hartman will serve as delegate to the state meeting with Dr. Sheppard as alternate.

Dr. C. D. Shrader, Newton, was speaker at a meeting of the Harvey County Society held on February 7. His subject was "Bandl's Contraction Ring," and he illustrated the subject with case reports.

In 1953, 8,600 pedestrians were killed in traffic accidents in the United States.

Tuberculosis mobile unit x-ray surveys in Kansas were made in 55 counties in 1953, and 125,124 Kansans were x-rayed.

AMENDMENTS TO BY-LAWS

Two amendments to the By-Laws of The Kansas Medical Society have been proposed to the Committee on Constitution and Rules during the past year. They are published here for the information of all members of the Society.

1. By-Laws, Chapter VI, Section 1—Election of Officers. This section shall be amended in Lines 9, 10, and 11 to read as follows: "No past president may serve on more than two consecutive annual nominating committees, AND NO PAST PRESIDENT CURRENTLY HOLDING AN ELECTIVE OFFICE SHALL BE ELIGIBLE TO BE ELECTED TO THE COMMITTEE."

Comment: Criticism has been made that it is unfair to elect a past president holding an elective office to the Nominating Committee, which might feel free to place the same person in nomination for re-election.

The Committee on Constitution and Rules recommends the adoption of this amendment.

2. By-Laws, Chapter XI, Section 2—Committees. This section shall be amended in Line 6 after the word "Society" by the addition of the following: "Members of standing committees shall be appointed for terms of three (3) years, one-third of the committee membership to be appointed annually, EXCEPT that at the first year of the extended appointments, one-third shall be appointed for one (1) year, one-third for two (2) years, and one-third for three (3) years. In case of special committees, the same formula of appointments shall be used when desirable or necessary for the functions of the committee."

Comment: Under the present system it is recommended that a portion of each committee be reappointed, while under this amendment a majority of each committee will be retained. This should permit of no interruption in the course of work or problems begun or attempted. It also relieves each incoming president of the arduous problem of appointing entire committees, leaving to his discretion desirable members to be added. If adopted, this amendment will give the incoming president the important function of appointing some members for one year, others for two years, and others for full three-year terms.

The committee offers this for consideration of the House of Delegates. It may be voted upon or referred to the Council for consideration with recommendation for submission to vote next year.

Respectfully submitted,

A. W. Fegtly, M.D., *Chairman*

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Bumbalo, T. S., Gustina, F. J.,
and Oleksiak, R. E.:
J. Pediat. 44:386, 1954.

White, R. H. R., and
Standen, O. D.:
Brit. M. J. 2:755, 1953.

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Brown, H. W.:
J. Pediat. 45:419, 1954.

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NOMINATIONS FOR 1955-1956

A meeting of the Nominating Committee of The Kansas Medical Society was held at the Jayhawk Hotel, Topeka, on January 9, 1955, and the following names were proposed for the various offices to be filled by vote of the House of Delegates at the annual session in May:

FOR PRESIDENT-ELECT

Dr. Clyde W. Miller, Wichita

FOR FIRST VICE-PRESIDENT

Dr. Conrad M. Barnes, Seneca

FOR SECOND VICE-PRESIDENT

Dr. Thomas P. Butcher, Emporia
 Dr. Mahlon H. Delp, Kansas City
 Dr. Dwight Lawson, Topeka
 Dr. Barrett A. Nelson, Manhattan
 Dr. Lloyd W. Reynolds, Hays

FOR CONSTITUTIONAL SECRETARY

Dr. James A. Butin, Chanute

FOR TREASURER

Dr. John L. Lattimore, Topeka

FOR A.M.A. DELEGATE, 1956-1957

Dr. George F. Gsell, Wichita

FOR A.M.A. ALTERNATE, 1956-1957

Dr. John C. Mitchell, Salina
 Dr. Glenn R. Peters, Kansas City
 Dr. Frederick E. Wrightman, Sabetha

The list of nominees is presented now in accordance with provisions of the Constitution and By-Laws. Additional nominations, of course, may be made from the floor at the time of the election.

TPI TEST AVAILABLE TO KANSAS PHYSICIANS

The Treponema Pallidum Immobilization test, a specific diagnostic test for syphilis, is now available to Kansas physicians through an arrangement made by the Kansas State Board of Health. The test is not intended as a routine diagnostic procedure; its value lies in its accuracy and specificity when applied to doubtful cases.

Blood specimens should be submitted to the Public Health Laboratories, which will process the sample and send it to the Venereal Disease Research Laboratory of the Public Health Service, in Georgia, where the test will be run. The request to the Kansas State Board of Health for this service should include a brief review of the diagnostic measures so far performed on the patient in question.

The service is being offered now for a trial period only. The Public Health Service, on July 1, 1955, will review its decision and decide whether or not to continue the service.

The Chamber of Commerce, Hutchinson, will make hotel reservations for those attending the annual meeting of The Kansas Medical Society, May 1-5.

DEATH NOTICES

PEARL R. YOUNG, M.D.

Dr. P. R. Young, 78, an active member of the Franklin County Society, suffered a heart attack on the street in Ottawa on January 24 and died immediately. He had practiced in Ottawa, specializing in eye, ear, nose, and throat work, since 1926, except for a period of three years when he lived in Topeka and Axtell. He was educated at the University Medical College of Kansas City, receiving his degree in 1905. He began practice in Axtell, later moved to Solomon for a ten-year period, and practiced also in Salina for five years before opening his office in Ottawa.

WILLIAM HERBERT WALKER, M.D.

An honorary member of the Wyandotte County Society, Dr. W. H. Walker, 80, died at his home in Robards, Kentucky, on February 9. He had been in retirement since 1943. After his graduation from Louisville Medical College in 1897, Dr. Walker began practice in Kansas City, continuing there for 38 years.

EDGAR ERNEST BROOKS, M.D.

Dr. E. E. Brooks, 71, who had practiced in Burden since his graduation from the University Medical College, Kansas City, in 1908, died at an Arkansas City hospital on February 21. He was a member of the Cowley County Medical Society. Dr. Brooks was active in civic affairs, having served 18 years as mayor of Burden and 11 years on the school board there. He was honored by his community on June 24, 1951, at a celebration called "Dr. Brooks' Day."

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Epidemiology of Infectious Hepatitis

Monaford D. Durnell, M.D.

Kansas City, Missouri

Outbreaks of infectious (epidemic) hepatitis have been recognized for at least 200 years in Germany. Many accounts have been written, apparently about this disease, referring to it by such terms as "infective hepatitis," "epidemic catarrhal jaundice," "epidemic hepatitis," and "hepatitis epidemica." More recently, the epidemiology of this disease has been more thoroughly studied. It has been reported to have been "the only pandemic disease of World War II."¹ Until recently, the majority of the larger epidemiological studies had been made on military personnel, and accurate data on civilian epidemics were scarce. This was due in part to the lack of a specific diagnostic test and to general laxness in reporting the disease, especially mild clinical cases.

GEOGRAPHICAL DISTRIBUTION

The distribution of infectious hepatitis is not exactly defined, but there does not appear to be climatic or environmental limitation as this disease occurs throughout the world. It is universally agreed that it flourishes best under poor sanitary conditions.^{2, 3} Infectious hepatitis has been endemic in Kansas during recent years, and small epidemics have occurred in several communities. Factors often reported in outbreaks of this disease include a damp climate and wet surroundings.⁴ However, these factors are not essential for widespread epidemics have been reported in deserts.

SEASON

Many workers^{2, 5, 6, 7, 8, 9, 10} in nearly all parts of the world report epidemics occurring in the fall and winter months while others report epidemics occurring during the summer months. The characteristic trend of epidemics appears to be increased incidence during fall and early winter. No truly adequate explanation for this seasonal trend has ever been put forward. The best hypothesis is that it may result from the crowding which takes place at the onset of cold weather with the idea that close personal contact in the presence of poor sanitary conditions may account for higher incidence.

INCIDENCE

Apparent sporadic cases are encountered fre-

quently. In numerous epidemics there are surely many uncounted subclinical cases.¹¹ Clinical incidence in the Baltimore civilian population over a one-year period was 2.9 per cent¹² and that in an institution among student nurses was 18 per cent.¹³ Incidence among occupational troops in Europe has been 0.6 to 1.8 per cent per annum.¹⁴ In an epidemic in a summer camp where more intimate interpersonal contacts were made between those of a younger age group, the incidence was 61 per cent over a 13-week period. In a civilian epidemic, 17 per cent of households had multiple cases.¹⁵

Many recent workers,^{2, 10, 16} in studying family outbreaks of infectious hepatitis, found the exposure of children within family groups results in a surprisingly high incidence of the disease. The straggling succession of cases spaced at irregular intervals is quite frequent in family studies. The terms "serial incidence" and "kangaroo sequence"¹⁷ have been used to describe this prolongation of incidence.

An illustration of the high incidence of this disease among members of larger families was seen in a recent case treated at the University of Kansas Medical Center. The patient, a young mother of five children, lived in a community in Kansas where scattered cases of infectious hepatitis had occurred for four to five months prior to the onset of the disease in this family. The seven-year-old daughter, who attended a consolidated school where a cook had had infectious hepatitis, became ill the first week of May. Four days later two sons, ages six and four and one-half years, also developed the illness. During the third week of June the patient, her husband, and the 14-months-old daughter developed typical symptoms. All but the three youngest children developed jaundice. The morbidity was much greater in the husband and especially in the patient who was hospitalized during her third recurrence of the disease.

Race and Sex—Since a large percentage of reported cases are in military personnel, the majority of cases in the literature are males. However, in epidemics where both males and females are exposed, the difference of sex incidence is not significant. In the Mediterranean Theater of World War II, Negro troops appeared to be more resistant to infectious hepatitis than white troops.¹⁸

Age—The age of greatest incidence, in those epidemics in which all age groups are exposed,

This is one of 11 theses, written by fourth year students at the University of Kansas School of Medicine, selected for publication by the Editorial Board from a group judged to be the best by the faculty at the school. Dr. Durnell is now interning at General Hospital, Kansas City, Missouri.

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ranges from 5 to 17 years⁷ or 6 to 25 years.¹¹ Ford¹⁹ reports an epidemic of 300 cases in London in which 80 per cent of the patients were under 15 years and 90 per cent were under 24 years of age. In the Mediterranean Theater during a 27-month period in 1943-45, in which more than 35,000 cases of infectious hepatitis occurred in military personnel, there were twice as many patients under the age of 30 as there were over 33.¹⁸ In the epidemic on Malta⁵ during World War II, 86 per cent of the cases fell in the age group 20 to 29.

MORBIDITY AND MORTALITY

In general, severity is reciprocally related to age.²⁰ Especially is this true in the youngest age groups (0 to 4 years); it therefore appears that it is best to have experience with the virus at an early age. The low morbidity in children would lead one to believe that infectious hepatitis is a relatively innocuous disease. However, in persons of military age it is a disease of high morbidity. The period of disability in the Mediterranean Theater averaged approximately 60 days,¹¹ and the mortality was approximately 0.2 per cent. Mortality may vary with the general condition of the patient before onset⁴³ and with the difference in the virulence of various strains of the virus. In general, the mortality rate of epidemics is less than 1 per cent.

INCUBATION PERIOD

Civilian and military epidemic studies and the human fecal-oral and parenteral transmission experiments within the past 15 years have contributed much information. The incubation period given by various workers^{1, 7, 19, 20, 21, 22, 25} ranges from 8 to 42 days, but the majority have found it to range from 20 to 40 days. In experimentally induced infections, the incubation period was prolonged several days by attenuation of the causative agent or by decreasing the number of viral bodies given.²⁰

PERIOD OF INFECTIVITY

During World War II, in the military epidemic on Malta, it was first thought by some workers⁵ that infectivity was confined to the pre-icteric stage. In more recent years, experimental fecal-oral and parenteral transmission of the causative agent has revealed that the virus is present in blood three days before appearance of symptoms and is present at least eight days after onset of jaundice.²¹ Fecal material has been proven to be infectious during the first two weeks of jaundice, but isolated voluntarily-induced cases may remain infectious for five to 15 months or longer as "chronic-active carrier cases."²¹ However, the majority of the human volunteer ex-

periments have shown the causative agent not to be present in the volunteer's feces three weeks after disappearance of jaundice.

IMMUNITY

Experiments with human volunteers indicate that an attack of infectious hepatitis "provides immunity against a similar strain of virus"⁷ which is believed to be "relatively permanent."¹¹ The question of whether or not the immunity resulting from a single attack is effective against multiple strains has not been definitely proven.

There is considerable evidence to support the belief that resistance of persons over 30 years of age is due at least in part to acquired immunity obtained by subclinical infections.^{5, 11, 18} A postulation that decreased relative incidence of the disease with advancing age might be due partially to some unknown physiological factor related to age has been offered.

No cross immunity for homologous serum hepatitis has ever been demonstrated.

METHODS OF TRANSMISSION

The causative agent of epidemic hepatitis is transmitted in a variety of ways, and this contributes to the complexity of the epidemiology of the disease. Contact infection is presumably the most frequent type of transmission with both droplet and finger transmission as likely mechanisms.

Epidemics, studied thoroughly as to their epidemiology, have been described as being transmitted by contaminated milk,^{26, 30} water,^{1, 8, 13} and food.²⁹ The onset of these was explosive in character. Droplet or direct fecal-oral transmission^{11, 12, 13, 18, 24, 27} produces epidemics that are not so explosive in onset but with cases more scattered. The portal of entry of the causative virus is thought to be the mucosa of the intestinal tract.^{18, 28} Evidence for air-borne transmission is not convincing in most epidemics.

The purification of water containing the causative agent by increasing the chlorine content has not been practical. Chlorine content must be raised to 15 parts per million for a 30-minute contact period to get a definite attenuation of the hepatitis agent.³¹ Boiling water appears to be more effective in controlling spread of the disease.⁸

ETIOLOGICAL AGENT

The causative agent is primarily hepatotropic, filtrable through a Seitz and Berkefeld filter,⁴⁴ and it gives epidemiological evidence of being a virus. The virus is a sturdy organism as it is not killed by heating to 56°C. for 30 to 60 minutes and will withstand several months of drying. It remains active



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The virus is present in the blood and feces^{21, 30} of patients during the clinical stages of the disease. There is some disagreement among workers as to whether the virus exists in urine during the acute stages of the disease. Findlay³³ reported it to be present in urine but Neeffe^{1, 34} and Capps²¹ were unable to isolate it from urine on repeated attempts. Experimental work to isolate it from nasopharyngeal washings have failed.

Until recently, no host other than the human³⁸ had been found and attempts to infect several common laboratory animals have failed.^{11, 27, 36} These two factors have greatly hindered progress in control of the disease.

Recent experimentation³⁵ has revealed that an agent which is capable of inducing mild hepatitis in human volunteers has been propagated in rabbit liver tissue culture and in the amniotic cavity of the chick embryo. Whether this agent is identical with that causing infectious hepatitis cannot be stated with absolute certainty because of the lack of development of specific serological tests. However, the clinical picture is indistinguishable from non-icteric hepatitis following injection with natural infectious hepatitis virus. One may postulate further that serial transmission through tissue culture causes attenuation of the causative agent to the point that icterus is not produced.

A skin test has been developed recently which is positive in all convalescents of infectious hepatitis regardless of whether they developed the disease spontaneously or after experimental exposure.³⁵ Personal communication on May 10, 1954, with Dr. Mahlon Delp, professor of medicine, University of Kansas School of Medicine, revealed "at first the skin test was received with great enthusiasm but at the present time its value is questionable."

New methods of propagation of the virus open different avenues of approach to the diagnosis and control of the disease such as the development of specific complement fixation and hemagglutinin tests for the serologic determination of the presence of the causative virus. Eventually they should lead to the preparation of a specific vaccine for the prevention of infectious hepatitis.

Preventive Measures—Control of an infectious disease in which the etiological agent cannot be identified in the laboratory, and in which the characteristic clinical feature appears in only a portion of the cases, presents a difficult problem.

General Measures—Personal cleanliness, proper disposal of excreta, and prevention of overcrowding and contamination of food, water, and milk supplies⁴² all aid in control of the disease.

Since healthy carriers have been proved to exist and since patients may be infectious several days before onset of symptoms and at least three weeks after disappearance of symptoms, the problem of isolation of known cases during the period of infectivity and quarantine of known contacts becomes such an immense problem that it borders on the impossible. Especially is this true since the majority of patients are of school age. In thinking along the lines of the efficacy of isolation and quarantine, one must remember that for each clinical case there are probably many subclinical cases that are potentially infective.

Specific Measures—Use of Gamma Globulin. Early in the 1940's, it was postulated that neutralizing antibodies in gamma globulin obtained from pooled human blood plasma might be effective in aborting or attenuating this disease if administered during the incubation or pre-icteric stage. In 1945, Stokes and Neeffe³⁷ first demonstrated the value of gamma globulin in the prevention or modification of infectious hepatitis in a group of persons exposed in a severe outbreak. The relatively long incubation period (20-40 days) of this disease and the delayed onset of the icteric stage are time factors which facilitate the use of gamma globulin for this purpose. Results are good when gamma globulin is administered intramuscularly to exposed individuals during the incubation period of the disease. Results are best when injections are given at least six days prior to the appearance of jaundice. Capps and Stokes²¹ dem-

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onstrated this by giving a large dosage (0.06 cc. per pound of body weight) of gamma globulin and found that it failed to prevent the onset of jaundice four days later.

Due to the limited supply of gamma globulin and its great demand in poliomyelitis experimentation, much work has been done in an attempt to determine the minimal effective dosage for the prevention of this disease. Earlier experimentation^{16, 39, 41} found the proper dosage of gamma globulin to be between 0.01 and 0.06 cc. per pound of body weight. The dose of 0.1 cc. was too high. Some found that 0.01 cc. per pound failed to prevent the disease in a few scattered cases, but it does appear to be effective in preventing the spread of hepatitis in epidemics among children and within family groups.^{22, 44} Havens,³⁹ using 0.08 cc. per pound of body weight, showed no better results than Ashley,¹⁰ who used only 0.01 cc. per pound. He found it to be quite effective in reducing incidence of secondary cases among family contacts.

The family attack rate in families receiving no inoculation was 15.2 per cent while that in families receiving one inoculation was 0.6 per cent. The smaller single injection of 0.01 cc. per pound of body weight gives protection for 2 to 9 months.²²

It is conceivable, but not probable, that traces of gamma globulin remain in the circulation or attached to tissue cells for that length of time. The greater probability exists that the waning passive immunity offers the opportunity for unapparent or subclinical infections among inoculated groups, which results in active immunization superimposed on passive immunity.

Today the use of gamma globulin in epidemics appears to be the most helpful tool in the prevention of spread of infectious hepatitis.

CONCLUSIONS

1. Review of the epidemiological characteristics of infectious or epidemic hepatitis has been presented.
2. Use of gamma globulin, good personal hygiene, and environmental sanitation are avenues of control and prevention that can be followed.
3. Future experimentation may produce a specific laboratory diagnostic test or a satisfactory vaccine which possibly would give adequate control and prevention of infectious hepatitis.

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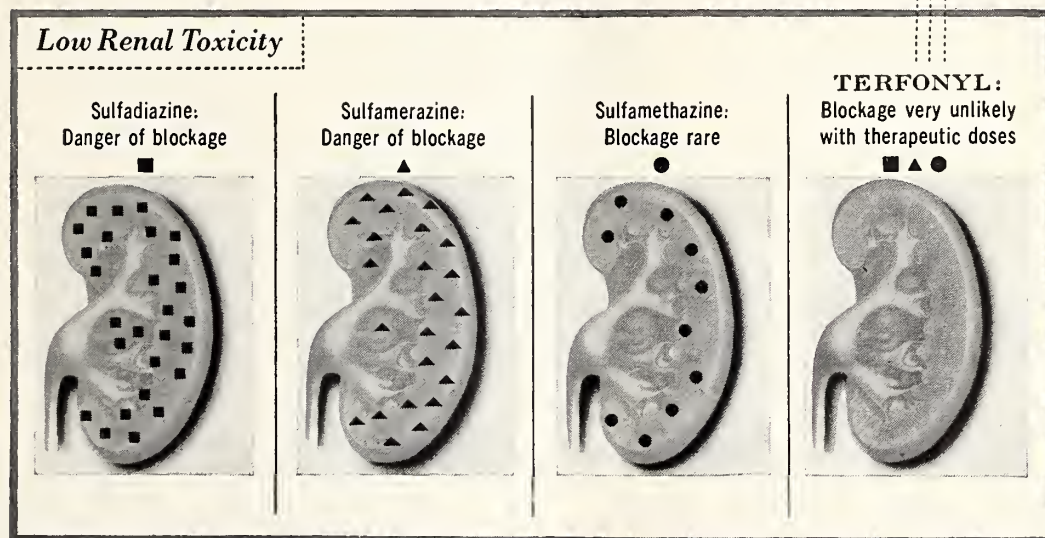
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NEW DEPARTMENT OF A.M.A.

A new department known as the Membership-Circulation Department of the A.M.A. was set up in January to keep all records and operations concerned with membership status. Robert A. Enlow will head the new unit. Frank V. Cargill, who formerly directed the keeping of such records, will devote his time exclusively to the A.M.A. Directory and Biographical Departments.

SOCIETY OF PHYSICIAN PILOTS

Plans are now being made for the organization of a national society of physician pilots, and immediate objectives are listed in a publicity release as compilation of a complete roster of flying physicians, appointment of temporary local area chairmen, the collection of ideas and suggestions, and encouragement to physicians to fly to the A.M.A. meeting in Atlantic City, June 6-10. A program will be arranged there if enough interest is shown.

The purposes of the society are tentatively listed as scientific, educational, and social, with emphasis on education to promote greater aviation safety.

Physician pilots are asked to send to H. D. Vickers, M.D., 25 Jackson Street, Little Falls, New York, their names, type of plane flown, and landing field.

Information on the preparation of physicians' income tax forms is being presented in the January and February issues of the *Journal of the American Medical Association*. The articles will later be published in handbook form, available from the Law Department of the A.M.A.

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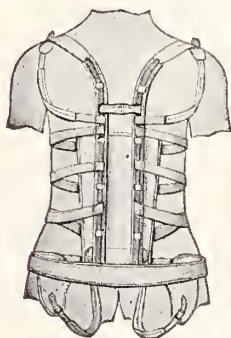
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BOOK REVIEWS

Pediatric Diagnosis. By Morris Green and Julius B. Richmond. Published by W. B. Saunders Company, Philadelphia. 436 pages, 8 illustrations. Price \$10.

This book considers pediatric diagnosis in three parts: history taking, physical examination, and symptom diagnosis. A fourth part entitled "Health Supervision" concludes the text. Though valuable in itself, this last section relates poorly to the plan and context of the rest of the book.

The section on physical examination, comprising about half the entire text, is remarkably detailed and complete. Many useful pointers on the handling of children in the examination situation are included for the beginning doctor. On the other hand, the discussion of abnormal physical findings frequently presumes a knowledge of pediatric pathology and even clinical pediatrics which the beginning doctor might not be expected to possess.

The section on symptom diagnosis seems ineptly handled. In an apparent fear of overlooking some disease entity which, under extreme conditions, might be responsible for the symptom at hand, the

authors have indulged in what might be termed disease name dropping—the listing of many diseases without sufficient discussion or qualification. For example, on less than three pages there are listed 44 possible causes of stridor. This section reads more like the index of a book than the text of one.

Laboratory aids to diagnosis are almost completely ignored. This would seem to be a serious deficiency in a book concerned with "a systematic and integrated approach to patient study." Herein lies the book's greatest defect, and it is largely one of design rather than execution. Any attempt to fragment the physical findings and symptoms of a patient, and to categorize the possible causes of each fragment, would seem to be a less helpful approach to medical practice than a more complete and integrated study of children and their maladies. Methods of study may be largely a matter of personal preference, and for those who favor a highly systematized use of check lists, this book should be entirely adequate.

The index is well done. The bibliography is pertinent and, with a few exceptions, well chosen and up-to-date. The technique of citing references within the text where they pertain to the discussion has many advantages over the conventional use of lists at the ends of chapters.—C.A.M.

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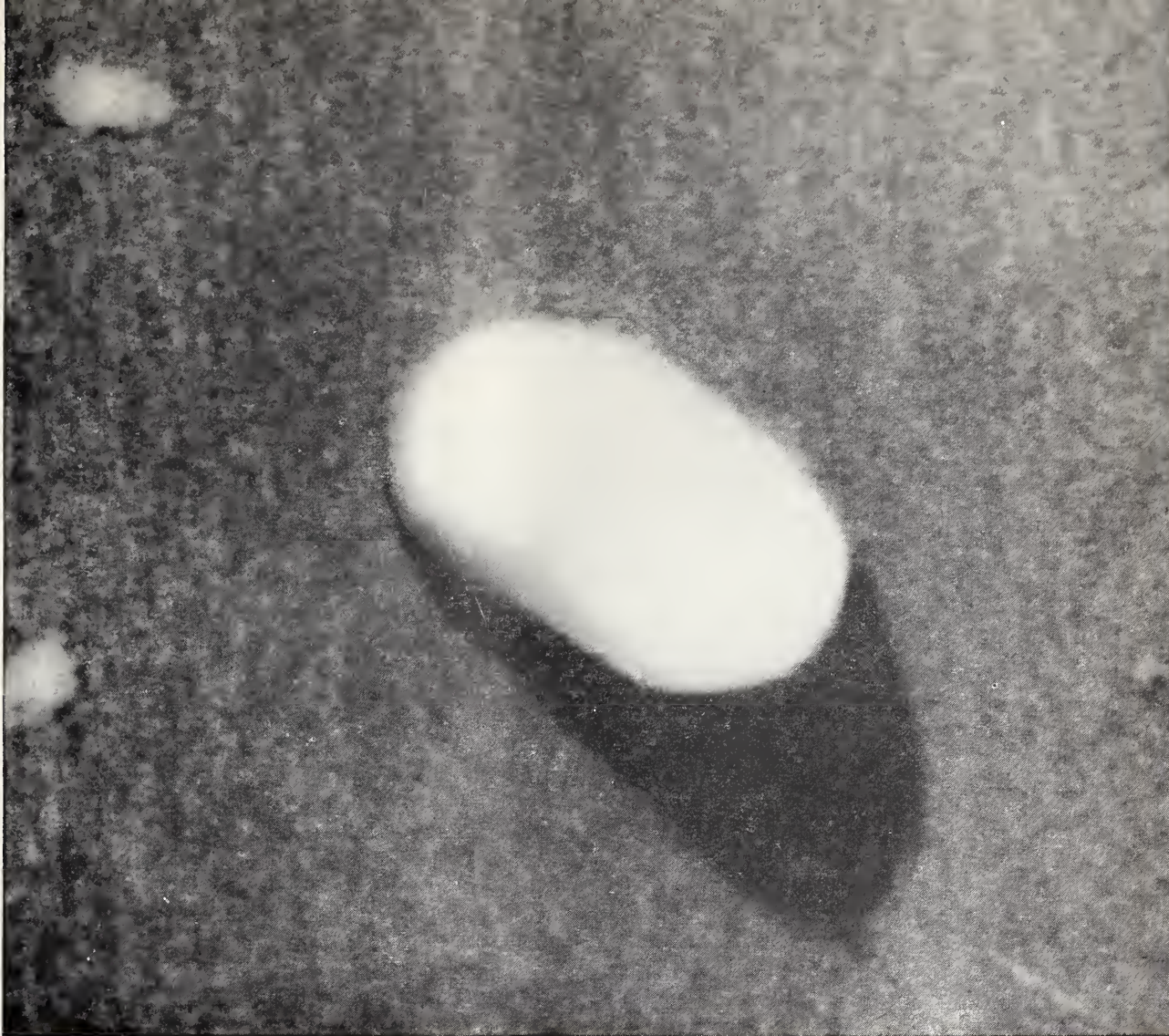
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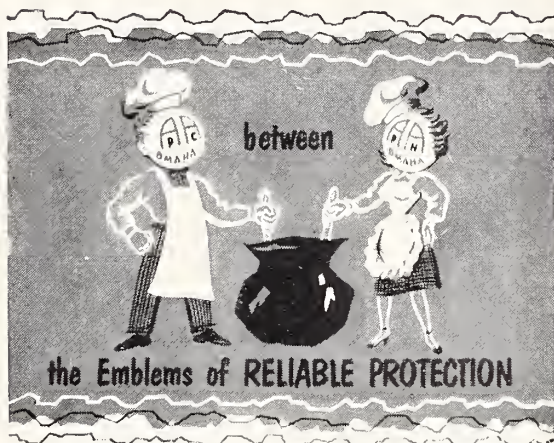
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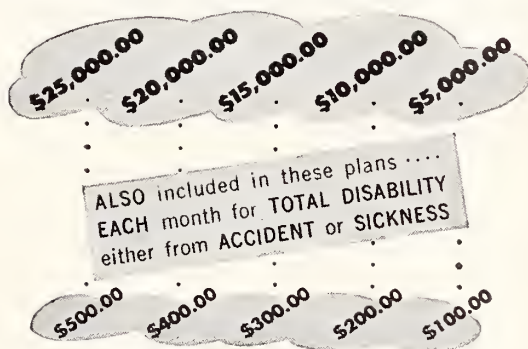
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ANNOUNCEMENTS

Any physician interested in gastroenterology will be welcomed at a meeting of the Southern Region of the American College of Gastroenterology to be held in Memphis, Tennessee, on Sunday, April 24. Programs may be obtained from the Secretary, 33 West 60th Street, New York 23, New York.

The 1955 meeting of the American Goiter Association will be held in the Skirvin Hotel, Oklahoma City, April 28, 29, and 30. The program will consist of papers and discussions on the physiology and diseases of the thyroid gland. Dr. John C. McClinck, 1491½ Washington Avenue, Albany, New York, is secretary.

The Thompson, Brumm and Knepper Clinic, St. Joseph, Missouri, announces that the sixth annual Dr. F. G. Thompson, Sr. lecture will be presented at the clinic building on Thursday, May 19, at 8:15 p.m. Dr. Walter V. MacKenzie, professor of surgery at the University of Alberta, Edmonton, Canada, will present a lecture on "Pancreatitis, Fundamental and Clinical Aspects." All physicians are invited to attend.

The 41st session of the Trudeau School of Tuberculosis will be held at the school, Trudeau, New York, June 1 through June 29. The course will cover all aspects of pulmonary tuberculosis and certain phases of other chronic chest diseases. A tuition fee of \$100 will be charged. Applications may be secured from the secretary of the school.

The Department of Otolaryngology, University of Illinois College of Medicine, will hold its annual assembly in otolaryngology, September 19 through October 1. Dr. Maurice F. Snitman will direct Part I, ending September 24, on surgical anatomy of the head and neck, fundamental principles of neck surgery, and histopathology of the ear, nose, and throat. Dr. Emanuel M. Skolnik will conduct Part II, devoted entirely to lectures and panel discussions of advancements in otolaryngology. Registration is optional for one or both weeks.

X-ray findings of the Kansas mobile units during 1953 were as follows: 379 suggestive of tuberculosis; 1,456 suspected of tuberculosis; 1,975 showing cardiac pathology, and 237 showing other non-tuberculous pathology.

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A contribution of \$10,355 to the American Medical Education Foundation was made last month by the Utah State Medical Society. In presenting the check Dr. George M. Fister, Ogden, Utah, said, "It is the belief of all of us who practice medicine in Utah that every physician in America should support the Foundation's program to lend financial assistance to our medical schools. We hope that our adoption of a \$20 per member dues increase will help show other states that the urgent need for funds demands bold action on the part of every state medical society."

EXPANSION OF PUBLIC HEALTH SERVICE

A major expansion and reorganization of the commissioned reserve of the Public Health Service, Department of Health, Education, and Welfare, as a national defense measure has been announced by Surgeon General Leonard A. Scheele. The service expects to commission an additional 2,000 reserve officers by June 30, 1955, and present plans call for commissioning another 3,000 officers during the 1955-1956 fiscal year.

The service has been assigned extensive new defense responsibilities. In addition to building up emergency reserve strength, it is stepping up research

in disaster health problems and is developing a program to reinforce state and local health departments in time of national crisis.

Dr. Scheele said that an officer of the emergency reserve would be called to active duty without his consent only in the event of a national emergency, publicly recognized as requiring such action. Officers of the emergency reserve already performing important health functions would not be called for service in another area without clear justification.

The emphasis initially will be on commissioning physicians, dentists, sanitary engineers, and nurses. A training program for officers in the emergency reserve will start soon and will consider health problems associated with atomic, biological, and chemical warfare and other national emergencies.

MEDICAL FILMS POPULAR

The popularity of medical films may be gauged by a study of registration at the film program given at the A.M.A. meeting in Miami in December. A total of 1,716 physicians attended. The three most popular films were "Pheochromocytoma" by Dr. Keith Grimson, Durham, North Carolina; "Management of Obesity" by Dr. Norman Jolliffe, New York City, and "Nephrosis in Children" by Dr. Robert Cooke, New Haven, Connecticut.

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CHLOROMYCETIN is a potent therapeutic agent and, because certain blood dyscrasias have been associated with its administration, it should not be used indiscriminately or for minor infections. Furthermore, as with certain other drugs, adequate blood studies should be made when the patient requires prolonged or intermittent therapy.

*Pratt, R., & Dufrenoy, J.: Texas Rep. Biol. & Med. 12:145, 1954.



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APRIL, 1955

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THE JOURNAL OF THE KANSAS MEDICAL SOCIETY

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THE JOURNAL *of the* KANSAS MEDICAL SOCIETY

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Volume LVI

APRIL, 1955

No. 4

Greetings!

The members of the Reno County Medical Society consider it a great honor to be host to The Kansas Medical Society at its annual meeting, May 1-5, 1955. It is the first time that our Society has had this opportunity, and we are doing our very best to see that nothing is left undone to make your stay in Hutchinson as enjoyable as possible.

Our committees, under the capable supervision of Dr. Albert C. Armitage as general chairman, have put in many long hours of hard work and study to prepare a program which we feel will be of value and interest to all. On Tuesday and Wednesday of that week there will be the usual arrangement of speakers, and in the afternoon of each day there will be a panel made up of the guest speakers to give each member attending a chance to have questions answered.

On the last day of the meeting, Thursday, the program will be somewhat different from programs of the past. Speakers and subjects presented will be by seven different specialty societies. The morning will be devoted to various specialty subjects, and all seven programs will be synchronized so that any member may go from one program to another exactly on time, knowing that the program he attends will be ended at the time specified. This new arrangement will allow specialty societies to present material to general practitioners, and it will allow general practitioners to listen to specialized presentations. The scientific program, commercial exhibits, and scientific exhibits will be presented at the Sports Arena.

The annual banquet will be held this year at the new Baker Hotel. The noonday luncheons will be served to you at the Sports Arena on East Eleventh Street.

The Woman's Auxiliary to the Reno County Medical Society has arranged an interesting and entertaining program for the ladies, so bring your wife to the meeting so that she can enjoy herself also.

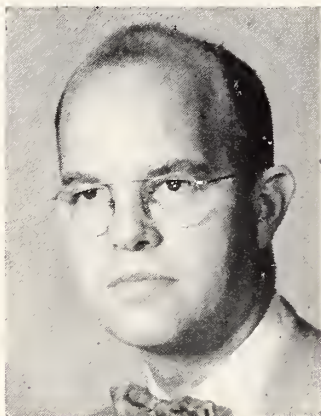
The medical assistants will have their annual meeting Sunday and Monday, May 1 and 2. The meeting starts Sunday afternoon in the Baker Hotel and ends with a luncheon meeting Monday, so there will be plenty of activities for your office girl. I'm sure she'll come back to your office with new ideas that will be of benefit to you in your office practice.

We are planning on you to come to this annual meeting of The Kansas Medical Society. You will meet old and new friends and pick up new ideas that will be of value in your everyday work at home. Again we say you are most cordially welcome.

Sincerely,

Leland F. Glaser, M.D., *President*
Reno County Medical Society

Guest Speakers

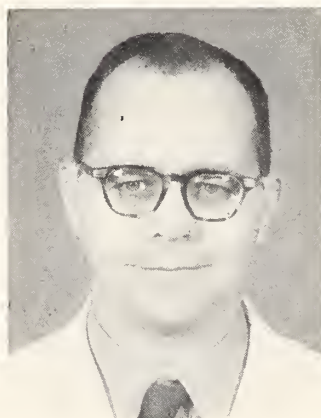


FRANK F. ALLBRITTEN, JR., M.D.

Kansas City, Kansas

Graduate, University of Pennsylvania School of Medicine, 1938; Professor of Surgery and Chairman of Department of Surgery, University of Kansas School of Medicine; Consultant in Thoracic Surgery, Veterans Administration Hospital, Kansas City; Diplomate, American Board of Surgery; Fellow, American College of Surgeons; Member, Society of University Surgeons, American Association for Thoracic Surgery, American Association for the Advance of Science, Western Surgical Association.

Specialty: Surgery.



FREDERICK R. CARRIKER, M.D.

Denver, Colorado

Graduate, New York University College of Medicine, 1947; Chief, Ophthalmology Section and Chief, Ophthalmic Pathology Center, Fitzsimons Army Hospital; Instructor in Ophthalmology, University of Colorado Medical Center; in July to be Instructor in Ophthalmology, University of California Medical Center and associated with Proctor Foundation.

Specialty: Ophthalmology.

Telephone Numbers at the Arena—MOhawk 2-0381, MOhawk 2-1091 and MOhawk 2-1451

THOMAS FLINT, JR., M.D.

Richmond, California

Graduate, University of California Medical School, 1928; Director, Division of Industrial Relations and Chief, Emergency Department, Permanente Medical Group, Oakland and Richmond; Former Member of Orthopedic Staff, University of California Hospital; Former Assistant Medical Director, California State Compensation Insurance Fund; Author, *Emergency Treatment and Management*, W. B. Saunders Company, 1954.

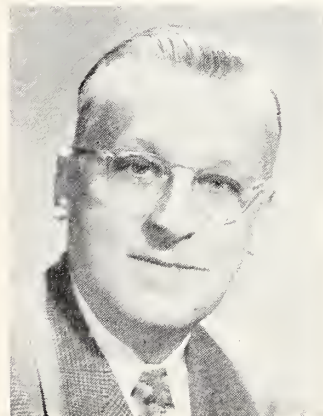
Specialty: Orthopedic Surgery.

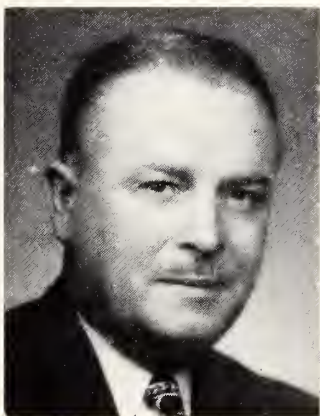
**EDWARD H. HASHINGER, M.D.**

Kansas City, Missouri

Graduate, Washington University School of Medicine, St. Louis, 1919; Professor of Medicine and Gerontology and Chairman of Department of Gerontology, University of Kansas School of Medicine; Faculty Member since 1921; Professor of Medicine since 1937; Diplomate, American Board of Internal Medicine; Fellow, American College of Physicians.

Specialty: Internal Medicine.





EDWARD C. HUGHES, M.D.

Syracuse, New York

Graduate, Syracuse University College of Medicine, 1924; Professor and Chairman of Department of Obstetrics, State University of New York Medical Center; Chief Obstetrician, Syracuse Memorial Hospital; Obstetrical Consultant, New York State Department of Health; Diplomate, American Board of Obstetrics and Gynecology; Fellow, American College of Surgeons, American Association of Obstetricians, Gynecologists and Abdominal Surgeons, American Committee on Maternal Welfare, Inc., International Fertility Association.

Specialty: Obstetrics and Gynecology.



JOHN M. LYON, M.D.

Denver, Colorado

Graduate, University of Kansas School of Medicine, 1937; Clinical Professor, Department of Psychiatry, University of Colorado School of Medicine; Winner, Commonwealth Fund Fellowship in Neuropsychiatry, Colorado Psychopathic Hospital, 1939-1942; Diplomate, American Board of Psychiatry and Neurology; Fellow, American College of Physicians, American Psychiatric Association.

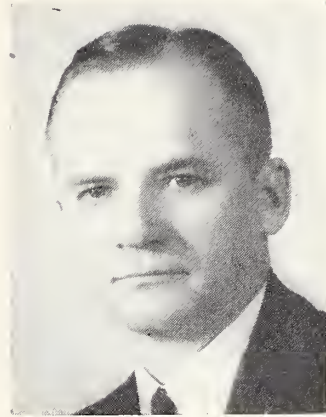
Specialty: Psychiatry.

THOMAS E. MACHELLA, M.D.

Philadelphia, Pennsylvania

Graduate, University of Pennsylvania School of Medicine, 1935; Associate Professor of Medicine and Chief of Gastrointestinal Clinic, University of Pennsylvania School of Medicine; Diplomate, American Board of Internal Medicine; Certified in Gastroenterology, 1948; Fellow, American Society for Clinical Investigation, American Clinical and Climatological Association, American College of Physicians, American Association for Advancement of Science, American Gastroenterological Association.

Specialty: Internal Medicine.

**KARL MENNINGER, M.D.**

Topeka, Kansas

Graduate, Harvard Medical School, 1917; Chief of Staff, The Menninger Foundation; Dean, Menninger School of Psychiatry; Co-Chairman of Education Committee, Topeka State Hospital; Senior Consultant in Psychiatry, Winter Veterans Administration Hospital; Clinical Professor of Psychiatry, University of Kansas School of Medicine; Fellow, American Psychiatric Association, American College of Physicians; Member, American Psychoanalytic Association, Advisory Commission of Institutional Management, Kansas State Board of Social Welfare.

Specialty: Psychiatry.



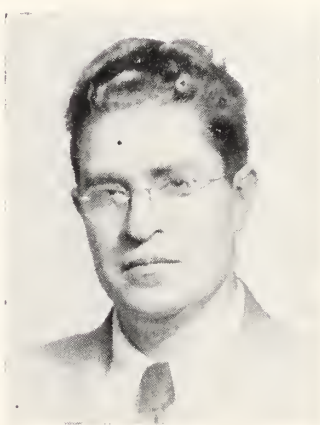


WALTER S. PRIEST, M.D.

Chicago, Illinois

Graduate, Washington University School of Medicine, 1920; Associate Professor of Medicine, Northwestern University Medical School; Senior Attending Physician, Chicago Wesley Memorial Hospital; Consulting Cardiologist, United Airlines; Diplomate, American Board of Internal Medicine; President-Elect, American College of Cardiology; Fellow, American College of Physicians and American College of Chest Physicians; Member, Board of Governors, Chicago Heart Association.

Specialty: Internal Medicine.



WILLIAM E. RICKETTS, M.D.

Park Forest, Illinois

Graduate, University of San Marcos, Lima, Peru, 1941; to United States in 1943 for Fellowship in Medicine at University of Michigan Medical School; Appointed in 1944 as Assistant in Department of Medicine, University of Chicago; Appointed in 1947 as Instructor in Department of Medicine, University of Chicago; Received Ph.D. in Field of Medicine, University of Chicago, in 1950, following Studies on Liver Disease, particularly Cirrhosis of the Liver; Author of 65 Publications in Medical Journals.

Specialty: Internal Medicine.

PHILIP THOREK, M.D.

Chicago, Illinois

Graduate, University of Illinois College of Medicine, 1931; Clinical Assistant Professor of Surgery, University of Illinois College of Medicine; Professor of Surgery, Cook County Graduate School of Medicine; Diplomate, American Board of Surgery; Fellow, American College of Surgeons, International College of Surgeons, American Association of Anatomists, American College of Chest Physicians; Chief Surgeon, American Hospital; Attending Surgeon, Cook County Hospital and Alexian Brothers' Hospital; Producer and Maker of 70 Medical Films.

Specialty: Surgery.

**THEODORE E. WALSH, M.D.**

St. Louis, Missouri

Graduate, Royal College of Physicians of London, 1925; Chief, Department of Otolaryngology, Washington University School of Medicine; Diplomate, American Board of Otolaryngology; Fellow, Royal College of Surgeons of England, American Academy of Ophthalmology and Otolaryngology; Member, American Laryngological Association, American Otological Society, Inc.

Specialty: Otolaryngology.



Chronological Listing of Events

Sunday, May 1

11:00 Annual Meeting and Luncheon, Blue Shield Board of Directors
Baker Hotel, Topaz Room

2:00 Kansas Medical Assistants' Society. See Page 205

Monday, May 2

9:00 Kansas Chapter, American Academy of General Practice. See Page 203

10:00 Golf Tournament, Kansas Medical Golfing Association
Prairie Dunes Country Club, Five Miles East of Hutchinson on 30th Street
Luncheon at the Club House

10:00 Practice Shooting, Kansas Medical Skeet and Trapshooting Association
Arkansas Valley Rod and Gun Club, East End of Carey Park

1:00 Golf Tournament, Kansas Medical Golfing Association
Prairie Dunes Country Club, Five Miles East of Hutchinson on 30th Street

1:00 Competitive Shooting, Kansas Medical Skeet and Trapshooting Association
Arkansas Valley Rod and Gun Club, East End of Carey Park

6:00 Cocktails, Tournament Banquet, Awarding of Prizes
Prairie Dunes Country Club, Five Miles East of Hutchinson on 30th Street

Tuesday, May 3

8:00 Breakfast Meeting, Blue Shield Physician Relations Committee
Baker Hotel, Mirror Room

8:00 Registration for General and EENT Scientific Sessions. See Pages 199 and 202

9:00 Registration for Annual Meeting, Woman's Auxiliary to Kansas Medical Society. See Page 204

9:00 Annual Meeting, Kansas Association of Clinic Managers. See Page 208

12:00 Luncheon
Sports Arena

6:30 House of Delegates Dinner and Meeting
Bisonte Hotel, Ballroom

Wednesday, May 4

8:30 Registration for General and EENT Scientific Sessions. See Pages 200 and 202

7:00 Annual Banquet
Hotel Baker, Ballroom

Thursday, May 5

8:00 Breakfast and Meeting, Professional Advisory Committee, Vocational Rehabilitation Service
Baker Hotel

8:30 Registration for Specialty Programs at Sports Arena
Anesthesiology—See Page 206
Chest Physicians—See Page 206
Orthopedics—See Page 207
Pathology—See Page 207
Pediatrics—See Page 207
Psychiatry—See Page 208
Radiology—See Page 208

12:30 House of Delegates Luncheon and Meeting
Baker Hotel, Ballroom

Telephone Numbers at the Arena—MOhawk 2-0381, MOhawk 2-1091 and MOhawk 2-1451

General Program

96th Annual Session

Tuesday Morning, May 3

- 8:00 Registration
Sports Arena, Northeast Edge of Hutchinson
From downtown district go five blocks east to Plum Street, nine blocks north to 11th Street, two blocks east to west entrance of Sports Arena.

FIRST GENERAL SESSION

ALBERT C. ARMITAGE, M.D., Hutchinson, *Presiding*

- 9:15 ADDRESS OF WELCOME
LELAND F. GLASER, M.D., Hutchinson
President, Reno County Medical Society
- 9:30 ACUTE MEDICAL EMERGENCIES
THOMAS FLINT, JR., M.D., Richmond
- 10:05 GALLBLADDER DISEASE
PHILIP THOREK, M.D., Chicago
- 10:35 Intermission to Visit Exhibits

SECOND GENERAL SESSION

HAROLD M. GLOVER, M.D., Newton, *Presiding*

- 10:50 LIVER DISEASE
WILLIAM E. RICKETTS, M.D., Park Forest
- 11:25 ACUTE SURGICAL EMERGENCIES
FRANK F. ALLBRITTEN, JR., M.D., Kansas City

LUNCHEON SESSION

- 12:00 Sports Arena

ROBERT SOHLBERG, JR., M.D., McPherson, *Presiding*

Tuesday Afternoon, May 3

THIRD GENERAL SESSION

- 2:00 SYMPOSIUM: HOW TO KEEP THE MEDICAL AND SURGICAL PATIENT ALIVE

Moderator: EDWARD H. HASHINGER, M.D., Kansas City

Participants: FRANK F. ALLBRITTEN, JR., M.D., Kansas City

THOMAS FLINT, JR., M.D., Richmond
WILLIAM E. RICKETTS, M.D., Park Forest

PHILIP THOREK, M.D., Chicago

- 4:00 Time to Visit Exhibits

Tuesday Evening, May 3

- 6:30 House of Delegates Dinner and Meeting
Bisonte Hotel, Ballroom

Telephone Numbers at the Arena—MOhawk 2-0381, MOhawk 2-1091 and MOhawk 2-1451

Wednesday Morning, May 4

- 8:30 Registration
Sports Arena, Northeast Edge of Hutchinson
From downtown district go five blocks east to Plum Street, nine blocks north to 11th Street, two blocks east to west entrance of Sports Arena.

LUNCHEON SESSION

12:00 Sports Arena

DeMERLE E. ECKART, M.D., Hutchinson, *Presiding***FOURTH GENERAL SESSION**GEORGE E. PAINE, M.D., Hutchinson, *Presiding*

- 9:30 FUNCTIONAL ASPECTS OF HEART DISEASE
WALTER S. PRIEST, M.D., Chicago
- 10:05 GASTROINTESTINAL FUNCTIONAL DISORDERS
THOMAS E. MACHELLA, M.D., Philadelphia
- 10:30 Intermission to Visit Exhibits

Wednesday Afternoon, May 4**SIXTH GENERAL SESSION**

2:00 SYMPOSIUM: FUNCTIONAL DISORDERS

Moderator: KARL A. MENNINGER, M.D., Topeka
Participants: EDWARD D. HUGHES, M.D., Syracuse
JOHN M. LYON, M.D., Denver
THOMAS E. MACHELLA, M.D., Philadelphia
WALTER S. PRIEST, M.D., Chicago

4:00 Time to Visit Exhibits

FIFTH GENERAL SESSIONFRANCIS A. THORPE, M.D., Pratt, *Presiding*

- 10:50 PSYCHOSOMATIC ASPECTS OF THE FEMALE PELVIS
EDWARD C. HUGHES, M.D., Syracuse
- 11:25 HEADACHES
JOHN M. LYON, M.D., Denver

Wednesday Evening, May 4

7:00 Annual Banquet
Hotel Baker, Ballroom

Telephone Numbers at the Arena—MOhawk 2-0381, MOhawk 2-1091 and MOhawk 2-1451

Thursday, May 5

8:30 Registration

Sports Arena, Northeast Edge of Hutchinson

From downtown district go five blocks east to Plum Street, nine blocks north to

11th Street, two blocks east to west entrance of Sports Arena.

Programs presented by specialty groups.
For listing see Page 198

12:30 House of Delegates Luncheon and Meeting

Baker Hotel, Ballroom

Annual Meeting Committees

General Chairman, Albert C. Armitage, M.D.

ACADEMY OF GENERAL PRACTICE

Chester W. Haines, M.D., Harold L. Graber, M.D., and J. Dale Burger, M.D.

M.D., Charles T. McCoy, M.D., Clarence W. Hall, M.D., Sam Jones, M.D., Boyd L. Greever, M.D., and Harry E. Blasdel, M.D.

ARRANGEMENTS ON HOUSING

Edward L. Fitzgerald, M.D., and Jack L. Perkins, M.D.

Robert A. Crawford, M.D., Edward L. Fitzgerald, M.D., Gordon E. Stone, M.D., and Carlton H. Lee, M.D.

ARRANGEMENTS ON MEETING AND TRANSPORTATION

DeMerle E. Eckart, M.D., Harold R. Barnes, M.D., Sam Jones, M.D., Robert A. Crawford, M.D., and Edward A. Heffner, M.D.

GOLF AND SKEET

AUXILIARY

Marion E. Nunemaker, M.D., and J. Dale Burger, M.D.

MEDICAL ASSISTANTS

George A. Chickering, M.D.

SCIENTIFIC EXHIBITS

Robert W. Fernie, M.D., E. B. Struxness, M.D., Charles DeHaan, M.D., John B. Jarrott, M.D., and DeMerle E. Eckart, M.D.

COMMERCIAL EXHIBITS

John N. Blank, M.D., Eldon S. Rich, M.D., of Buhler, Louise F. Richmond, M.D., Gordon F. Stone, M.D., George E. Paine, M.D., and Victor R. Moorman, M.D.

SCIENTIFIC PROGRAM

Victor R. Moorman, M.D., George E. Paine, M.D., Robert W. Fernie, M.D., Lorin E. Dickelmann, M.D., Edward L. Fitzgerald, M.D., Carlton H. Lee, M.D., DeMerle E. Eckart, M.D., John B. Jarrott, M.D., Robert Sohlberg, Jr., M.D., of McPherson, Francis A. Thorpe, M.D., of Pratt, Orlin W. Longwood, M.D., of Stafford, and Alfred S. Hawkey, M.D., of Newton.

EVENT PROGRAM

William M. Scales, M.D., and Boyd L. Greever, M.D.

SPECIAL EVENTS

ENTERTAINMENT

Charles A. Boyd, M.D., John J. Brownlee,

Robert N. Shcars, M.D., Erling B. Struxness, M.D., and Guy R. Walker, M.D.

Eye, Ear, Nose, and Throat Section

All Sessions in South Room, Sports Arena

Tuesday Morning, May 3

- 8:00 Registration
Sports Arena, Northeast Edge of Hutchinson
From downtown district go five blocks east to Plum Street, nine blocks north to 11th Street, two blocks east to west entrance of Sports Arena.

FIRST SESSION

VICTOR R. MOORMAN, M.D., Hutchinson, *Presiding*

- 9:30 WHAT CAN BE DONE FOR THE HARD OF HEARING (PART 1)
THEODORE E. WALSH, M.D., St. Louis

10:30 Intermission to Visit Exhibits

SECOND SESSION

HAROLD E. MORGAN, M.D., Newton, *Presiding*

- 11:00 MODERN CONCEPTS OF OPHTHALMIC PATHOLOGY
FREDERICK R. CARRIKER, M.D., Denver

LUNCHEON SESSION

12:00 Sports Arena

Tuesday Afternoon, May 3

THIRD SESSION

EUGENE K. ENNS, M.D., Newton, *Presiding*

- 2:00 WHAT CAN BE DONE FOR THE HARD OF HEARING (PART 2)
THEODORE E. WALSH, M.D., St. Louis

3:00 Intermission to Visit Exhibits

FOURTH SESSION

MAX S. LAKE, M.D., Salina, *Presiding*

- 3:15 PERSONAL THOUGHTS ON OPHTHALMIC TUMORS AS RELATED TO THE CLINICIAN
FREDERICK R. CARRIKER, M.D., Denver

4:15 Meeting of EENT Section, Kansas Medical Society

Wednesday Morning, May 4

- 8:30 Registration
Sports Arena, Northeast Edge of Hutchinson
From downtown district go five blocks east to Plum Street, nine blocks north to 11th Street, two blocks east to west entrance of Sports Arena.

FIFTH SESSION

BYRON J. ASHLEY, M.D., Topeka, *Presiding*

- 9:30 CLINICAL PATHOLOGICAL PROBLEMS OF OCULAR UVEITIS
FREDERICK R. CARRIKER, M.D., Denver

10:30 Intermission to Visit Exhibits

SIXTH SESSION

NORTON L. FRANCIS, M.D., Wichita, *Presiding*

- 11:00 CHRONIC OTITIS MEDIA
THEODORE E. WALSH, M.D., St. Louis

LUNCHEON SESSION

12:00 Sports Arena

Wednesday Afternoon, May 4

SEVENTH SESSION

JAMES E. HILL, M.D., Arkansas City, *Presiding*

- 2:00 THE CLINICAL PATHOLOGICAL CORRELATION OF COMPLICATIONS OF OCULAR SURGERY
FREDERICK R. CARRIKER, M.D., Denver

3:00 Intermission to Visit Exhibits

EIGHTH SESSION

WILL D. PITMAN, M.D., Pratt, *Presiding*

- 3:15 CHRONIC RHINITIS AND SINUSITIS
THEODORE E. WALSH, M.D., St. Louis

Kansas Chapter, American Academy of General Practice

Monday, May 2, 1955

2:30 HERNIAE

FRANK F. ALLBRITTEN, JR., M.D., Kansas City

ALL SESSIONS IN BAKER HOTEL

3:00 Intermission

9:00 Registration

10:00 Business Meeting

Kansas Room

**CLOVIS W. BOWEN, M.D., Topeka, President
Kansas Academy of General Practice, Presiding**

3:15 THE DIAGNOSTIC SIGNIFICANCE OF PULMONARY CAVITY

COL. JAMES A. WIER, M.C., Denver

12:10 Luncheon

Topaz Room

3:45 ROUND TABLE DISCUSSION

CLOVIS W. BOWEN, M.D., Topeka, Presiding

**Participants: COL. JAMES A. WIER, M.C., Denver
FRANK F. ALLBRITTEN, JR., M.D., Kansas City**

CLINICOPATHOLOGICAL CONFERENCE

Moderator: WILLIAM J. REALS, M.D., Pathologist, St. Joseph Hospital, Wichita

Participants: COL. JAMES A. WIER, M.C., Fitzsimons General Hospital, Denver

FRANK F. ALLBRITTEN, JR., M.D., Professor of Surgery, University of Kansas School of Medicine, Kansas City

6:00 Cocktail Hour

Ballroom

2:00 Scientific Session

Kansas Room

7:00 Dinner

Ballroom

Lamp Lighters

KENNETH MCFARLAND, Ph.D., Topeka, Educational Consultant for General Motors

2:00 THE DIAGNOSTIC APPROACH TO PULMONARY DISEASE

COL. JAMES A. WIER, M.C., Denver

10:00 Dance

Woman's Auxiliary to the Kansas Medical Society

Annual Meeting, May 2, 3, 4, 1955 Hutchinson, Kansas

Monday, May 2

1:00- 4:00 Registration at Sports Arena and
Baker Hotel

Tuesday, May 3

9:00- 4:00 Registration at Sports Arena and
Baker Hotel

9:30-11:30 Welcoming Coffee
Wiley Tea Room

12:00 Past Presidents' Luncheon
Wiley Tea Room

2:30 Pre-Convention Board of Directors
Meeting
Public Library Auditorium

6:30 Dinner Party and Prairie Players
Baker Hotel, Ballroom

Wednesday, May 4

9:00-12:00 Registration at Baker Hotel

9:00 General Session
Public Library Auditorium

1:00 Luncheon honoring Mrs. George
Turner, National President, and
State Officers
Prairie Dunes Country Club

3:00 Post-Convention Board of Directors
Meeting
Prairie Dunes Country Club

7:00 Annual Banquet, Kansas Medical
Society
Baker Hotel, Ballroom

Kansas Medical Assistants' Society

Annual Meeting, May 1 and 2, 1955 Hutchinson, Baker Hotel

Sunday, May 1

9:00 Registration and Coffee
Mirror Room

AFTERNOON SESSION

Ballroom

2:00 Address of Welcome
LELAND F. GLASER, M.D., Hutchinson
President, Reno County Medical
Society

2:15 Response to Address of Welcome
MURRAY C. EDDY, M.D., Hays, Presi-
dent, Kansas Medical Society

2:30 The Technique of Influencing People
FRED SHARPE, University of Kansas,
Lawrence

3:15 The Medical Assistant and Blue Shield
TOM REED, Manager of Physician Re-
lations, Blue Cross-Blue Shield

3:45 Business Session and Election of Officers

EVENING SESSION

6:30 Dinner and Entertainment "May Day"
Ballroom

Monday, May 2

10:00 Meeting Called to Order and Announce-
ments

10:10 Greetings
HOPE FINLEY, Hutchinson, President,
Reno County Medical Assistants'
Society

10:15 An Education Program for the Medical
Assistant

MRS. ELIZABETH PECK, Detroit, Presi-
dent, Michigan Medical Assistants'
Society

10:45 Telephone Courtesies
JIM HUNGERFORD and K. E. WALKER,
Hutchinson, Southwestern Bell Tel-
ephone Company

11:15 Panel on the Cost of Medical Care
The Cost of a Medical Education
NORTON L. FRANCIS, M.D., Wichita
The Cost of Medical Instruments
DORIS G. NORTH, M.D., Wichita
Insurance as a Solution to Problems of
Cost
OLIVER E. EBEL, Topeka, Executive
Secretary, Kansas Medical Society

12:45 Luncheon
People in Quandries
TOM KELLEY, Hutchinson, Director of
Specch, Hutchinson Junior College

2:15 Installation of Officers

2:45 Viewing of Scientific and Technical Ex-
hibits
Sports Arena

Specialty Meetings

ANESTHESIOLOGY

Sponsored by Kansas Society of Anesthesiology

Thursday, May 5, 1955

9:30 Program to be announced

12:30 Luncheon at Baker Hotel, Mirror Room

CHEST MEDICINE

Sponsored by Kansas Chapter of
The American College of Chest Physicians

Thursday, May 5, 1955

10:00 LIPOID PNEUMONITIS

PAUL H. WEDIN, M.D., Wichita

10:20 THORACIC PROCEDURES IN INFANCY AND
CHILDHOOD

ROBERT M. BROOKER, M.D., Topeka

10:40 LUCITE PLOMBAGE

ROBERT K. PURVES, M.D., Wichita

11:00 PRIMARY LEIOMYOMA OF THE LUNGS

ALFRED M. TOCKER, M.D., Wichita

11:20 HUMAN INFECTIONS WITH ATYPICAL ACID
FAST ORGANISMS IN THE GREATER KAN-
SAS CITY AREA (based on work done
with Victor B. Buhler, M.D., and Law-
rence Wood, M.D.)

ANN POLLACK, M.D., KUMC, Kansas
City

11:40 TREATMENT OF PULMONARY EMPHYSEMA

L. E. PECKENSCHEIDER, M.D., Halstead

CARDIOVASCULAR SECTION

JOHN L. MORGAN, M.D., Emporia, *Presiding*

2:00 MYOCARDIAL INFARCTION DUE TO AN OVER-
DOSE OF EPINEPHRINE

BENJAMIN M. MATASSARIN, M.D., Wichita

2:20 TREATMENT OF LERICHE'S SYNDROME

CREIGHTON HARDIN, M.D., KUMC,
Kansas City

2:40 THE PHYSIOLOGY OF MITRAL STENOSIS

FREDERICK KITTLE, M.D., KUMC,
Kansas City

3:00 CONSTRICTIVE PERICARDITIS

T. K. LIN, M.D., KUMC, Kansas City

3:20 INTRAVENOUS RESERPINE IN THE TREAT-
MENT OF HYPERTENSION

E. GREY DIMOND, M.D., KUMC,
Kansas City

4:00 X-RAY CONFERENCE

MARTIN FITZPATRICK, M.D., KUMC, Kansas City,
Presiding

Participants: HOMER L. HIEBERT, M.D., To-
peka
JOHN R. KLINE, M.D., Wichita
NEWMAN C. NASH, M.D., Wichita

6:00 Hour of Cheer

7:00 Annual Dinner and Address

ALFRED GOLDMAN, M.D., St. Louis,
Member, Board of Regents

Election of Officers

ORTHOPEDICS

Sponsored by Kansas Orthopedic Club

Thursday, May 5, 1955

Program beginning at 10:00 a.m.

CERVICAL SPINE FUSION IN THE TREATMENT OF
FORWARD FRACTURE DISLOCATION

JOHN F. THURLOW, M.D., Hays

CONSERVATIVE LOW BACK TREATMENT

SPENCER C. McCRAE, M.D., Salina

SCOLIOSIS

JOSEPH C. RISSE, M.D., Pasadena

MARIE STRUMPELL ARTHRITIS

JOHN GROVE, M.D., Newton

Luncheon

PATHOLOGY

Sponsored by Kansas Society of Pathologists

Thursday, May 5, 1955

10:00 Business Session

A. A. FINK, M.D., Topeka, *Presiding*

PEDIATRICS

Sponsored by Kansas State Pediatric Society

Thursday, May 5, 1955

10:00 HISTIOCYTOSIS IN CHILDREN

ROY C. KNAPPENBERGER, M.D., Wichita

11:00 MANAGEMENT OF COMMON PSYCHIATRIC
PROBLEMS IN PEDIATRIC PRACTICEPAUL C. LAYBOURNE, M.D., Kansas City
Baker Hotel, Topaz Room10:30 THE OVER-ALL MANAGEMENT OF THE RE-
TARDED CHILD IN OUR SOCIETY

THEODORE E. YOUNG, M.D., Winfield

12:30 Luncheon and Business Session, Kansas
Chapter, American Academy of Pedi-
atrics

PSYCHIATRY

Sponsored by Kansas Psychiatric Society

*Thursday, May 5, 1955*CLARK CASE, M.D., Topeka, *Presiding*

10:00 THE NATURE OF REASSURANCE

THOMAS F. MORROW, M.D., Wichita

11:20 A CONTROLLED BLIND STUDY OF THORAZINE

SAM LACY, M.D., Topeka

10:40 THE TEACHING OF E.C.T. PROCEDURE IN A
PSYCHOANALYTICALLY ORIENTED HOSPITAL

WILLIAM TARNOWER, M.D., Topeka

1:00 Luncheon at Baker Hotel, followed by
business session

RADIOLOGY

Sponsored by Kansas Radiological Society

*Thursday, May 5, 1955*PETER E. HIEBERT, M.D., Kansas City, *Presiding*

9:30 MEDICAL ASPECTS OF HIGHWAY ACCIDENTS

HOWARD B. HUNT, M.D., Omaha, and

CHARLES MARSH, M.D., Valley, Nebraska

11:00 ROENTGEN DIAGNOSIS OF FOREIGN BODIES
IN THE CHEST

LELAND F. GLASER, M.D., Hutchinson

10:35 Discussion

11:30 X-RAY EXAMINATION IN THE DIAGNOSIS OF
APPENDICITIS

ANTHONY F. ROSSITTO, M.D., Wichita

10:45 Intermission

12:15 Luncheon at Baker Hotel

KANSAS ASSOCIATION OF CLINIC
MANAGERS*Tuesday, May 3, 1955*

Stamey Hotel, Coffee Shop Conference Room

9:00 Introduction of Guests and New Members

1:00 Clinic Organization

BOB SMITH, DOCTORS CARR and SMILEY,
Junction City

9:15 Business Meeting

2:00 Panel Discussion on (1) Insurance (Health
and Accident and Workmen's Compensation) and (2) Collection Methods and
Credit Control

10:30 Highlights of Last Annual Meeting, National Association of Clinic Managers

W. BURDELL BAKER, Wichita Clinic,
WichitaModerator: RAY UMBARGER, Topeka Medical
Center, Topeka

12:00 Luncheon

3:30 Report of Nominating Committee





Technical Exhibits

1. Mead Johnson and Company
2. Ethicon, Inc.
3. Coufal-Keleket X-ray Company
- 4 and 5. Munns Medical Supply Company
6. Warner-Chilcott Laboratories
7. American Ferment Company, Inc.
8. Greb X-ray Company
9. Goetze-Niemer Company
11. U. S. Vitamin Corporation
12. Eli Lilly and Company
13. The Zemmer Company
14. Ayerst Laboratories
15. Sharp and Dohme
16. Parke, Davis and Company
17. Blue Cross-Blue Shield
18. Carroll Dunham Smith Pharmacial Company
19. Ortho Pharmaccutical Corporation
20. IBM Corporation
21. Holland-Rantos Company, Inc.
22. Mutual Distributors, Inc.
23. Lederle Laboratories Division, American Cyanamid Company
24. Audio Digest Foundation
26. Winthrop-Stearns, Inc.
27. The National Drug Company
28. Pfizer Laboratories
29. M and R Laboratories (Similac)
- 30 and 31. Mid-West Surgical Supply Company
32. The Medical Protective Company
33. Sandoz Pharmaccuticals
34. American Optical Company
35. A. J. Griner Company, Inc.
36. Pet Milk Company
37. The Borden Company
40. Washington National Insurance Company
42. Ciba Pharmaceutical Products
43. Filter Queen of Kansas
44. Medco Products Company
45. Abbott Laboratories
46. Coe Surgical Supply Company
47. E. R. Squibb and Sons
48. A. H. Robins Company, Inc.
50. Hoffmann-La Roche, Inc.
52. General Electric Company, X-ray Department
55. Doho Chemical Corporation
56. J. B. Lippincott Company
- 57 and 58. A. S. Aloe Company of Kansas City
59. Burroughs Wellcome and Company (U.S.A) Inc.
60. Schering Corporation
- 61 and 62. The Coca-Cola Company
64. Blue Line Chemical Company
66. G. D. Scarle and Company
67. Commercial Insurance Company
68. United Medical Equipment Company
69. Quinton-Duffens Optical Company
70. H. G. Fischer and Company
71. W. B. Saunders Company
72. The Baker Laboratories, Inc.

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-  wide spectrum of effectiveness
-  rapid diffusion
-  prompt control of infection
-  minimum side effects

the decision often favors

ACHROMYCIN*

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Compared with certain other antibiotics, ACHROMYCIN offers a broader spectrum of effectiveness, more rapid diffusion for quicker control of infection, and the distinct advantage of being well tolerated by the great majority of patients, young and old alike.

Within one year of the day it was offered to the medical profession, ACHROMYCIN had proved effective against a wide variety of infections caused by Gram-negative and Gram-positive bacteria, rickettsiae, and certain viruses and protozoa.

With each passing week, acceptance of ACHROMYCIN is still growing. ACHROMYCIN, in its many forms, has won recognition as a most effective therapeutic agent.



LEDERLE LABORATORIES DIVISION *AMERICAN Cyanamid COMPANY* Pearl River, New York

*REG. U. S. PAT. OFF.

PRESIDENT'S PAGE

DEAR DOCTOR:

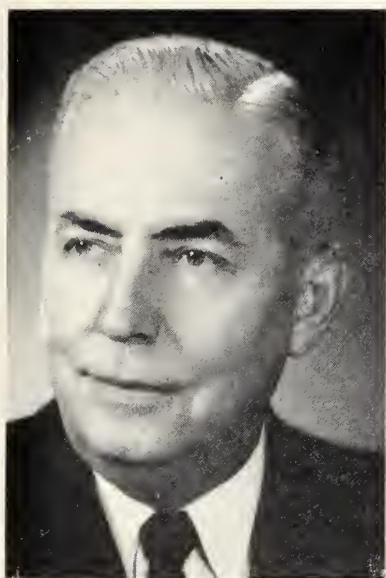
We have just finished a fairly successful legislative session, and I wish at this time to thank you all for the part you have played in bringing it to so satisfactory a close. There are some things I have not been so happy about, but things medical have turned out better than we had expected. I wish you would individually thank your legislators for the nice work they did and for their considerate treatment of your officers during our lobbying activities.

Very shortly we will be facing a new fiscal year under new officers and leaders. I would like to congratulate you for the wise choice you have made in the officers to follow. I leave this position with a keen sense of obligation to you all, with the thought that it has been a most satisfying year from the standpoint of personal service to you, and with a firmer realization of the fine group that you are.

Yours very truly,

Murray C. Eddy, M.D.

President



Murray C. Eddy, M.D., *President*

When critical problems appear which demand decisive action, leadership somehow finds the wisdom, the courage, and the ability to provide a solution. This axiom has never been more dramatically illustrated in the affairs of The Kansas Medical Society than now. Seldom has a president come to that office with greater worries. When has he completed his term with greater success?

Nor is this selfish. A two-year study to which your president and others gave many hours of diligent effort failed to establish osteopathic education as equivalent to medical standards. During the 1955 legislature not less than eight separate osteopathic attempts were made to increase their practice privileges, and all failed to pass. This legislative success is a distinct victory for the people of Kansas in whose behalf Dr. Eddy's effort was taken. It will assure for another two years that complete practice privileges in this state will be restricted to physicians who have achieved a standard of education not less than is required of the doctor of medicine.

There are many items concerning Dr. Eddy's term of office that deserve to be recorded, but in the years to come his presidency will be remembered by this one fact, and then not so much because it was done but how. Dr. Eddy called an emergency meeting of the House of Delegates and achieved a resolution on policy. From that date to the close of the legislative session the

Society was harrassed with opportunities to compromise and with emotional appeals, but the ultimate victory rode with Dr. Eddy's insistence upon integrity. It is for that he will be remembered.

President-Elect

The next in a long line of illustrious physicians who have served The Kansas Medical Society as president will be John M. Porter, M.D., of Concordia. This represents a particularly fortunate selection by the Society as he is most perfectly qualified to lead its affairs during the difficult and trying months ahead.

Dr. Porter's professional background is of the highest quality. He is widely recognized as a specialist in internal medicine, and in the affairs of organized medicine he has perhaps a broader experience than any other member of this Society. Locally he has served the Cloud County Society in every capacity. He has been active for many years in the Golden Belt Medical Society and has long been secretary of The Kansas Medical Society. As a delegate from Kansas to the American Medical Association he has made a nation-wide acquaintance. He has been president of the Kansas Heart Association, is a frequent guest lecturer at the University of Kansas School of Medicine, and served an illustrious period in the Medical Corps of the Navy during World War II.

Even that is but the beginning of his biography and serves only to say that Dr. Porter brings to the presidency the prestige of exceptional experience and an unusually impressive national acquaintance. Of even more significance, however, is a personal factor that is distinctive with Dr. Porter to a remarkable degree. Looking toward his leadership one should mention his rare talent for expression, his brilliant humor, but far and above all is his absolutely dominating and uncompromising idealism. Place all else aside and this factor still marks Dr. Porter apart as outstanding. The Society will be safe in his hands.



John M. Porter, M.D., *President-Elect*

Councilor Reports

FIRST DISTRICT

To the House of Delegates:

A meeting of the First District was held at the Sabetha Country Club on October 26, 1954. We were honored by having as guests Mrs. E. R. Millis of Kansas City, president of the Woman's Auxiliary to The Kansas Medical Society, and Dr. Murray C. Eddy, Hays, president of The Kansas Medical Society. After a delightful dinner, Mrs. Millis met with and addressed the Auxiliary members and Dr. Eddy met with the Society members. Mr. Rueben M. Dalbec, executive assistant of the Society, accompanied Dr. Eddy and assisted him in answering many questions put to them on various important matters.

In June the Nemaha County Medical Society gave a dinner at the American Legion Home in Sabetha, having as guests Senator Burton Lohmuller and Representative Alvin Bauman, both of this district. A panel discussion of pertinent matters gave all present a better understanding of the importance of protecting the public health.

Respectfully submitted,

F. E. Wrightman, M.D., *Councilor*

SECOND DISTRICT

To the House of Delegates:

The Second District, as now constituted, was created by the House of Delegates at the annual meeting last year. The Wyandotte County Medical Society comprises the only society in this councilor district. Therefore, this report will concern itself with the problems and activities of the Wyandotte County Medical Society, which are undoubtedly typical of those encountered by the other component societies of The Kansas Medical Society.

We are unique in one respect in that many members of the faculty and resident staff of the University of Kansas Medical Center are among our most valued members. Many of them spend considerable time and effort in our society's work.

One of our most pressing problems, as everywhere, is to attempt to improve our standing with the public. We are moving in this direction by several means. For several years the Society has had a mediation, nee grievance, committee to handle complaints from the public. An emergency answering service, which insures every resident of Wyandotte County the services of a physician when needed, has been in successful operation for the past one and one-half years. A newly formulated public relations committee has been working closely in the last year

with lay health organizations in sponsoring health education. We hope to initiate soon a program of lectures to lay audiences in co-operation with the University of Kansas Medical Center.

The Wyandotte County Medical Society members and officers realize many problems remain to be solved, but feel that satisfactory progress is being made.

Respectfully submitted,

Glenn R. Peters, M.D., *Councilor*

THIRD DISTRICT

To the House of Delegates:

As councilor of the new Third District, comprised of Douglas, Anderson, Franklin, Johnson, and Miami counties, I want to extend greetings and report on the district. We are still trying to get Linn County to organize but have been unsuccessful. The district is otherwise fully organized and active in the work of The Kansas Medical Society. As one would say, everything is under control and working very comfortably.

Respectfully submitted,

H. Penfield Jones, M.D., *Councilor*

FOURTH DISTRICT

To the House of Delegates:

During the past year no problems have arisen in the Fourth District.

The Southeastern Kansas Medical Society, which is made up of members of The Kansas Medical Society residing in the Fourth District, has been active and has offered excellent programs.

Several new hospitals are either completed or in the process of being completed.

There is no acute shortage of medical personnel in the district.

Respectfully submitted,

Charles E. Vestle, M.D., *Councilor*

FIFTH DISTRICT

To the House of Delegates:

Your councilor from the Fifth District reports a very uneventful year. Apparently no complications have resulted from redistricting. Each society in the district was represented at the special meeting of the House of Delegates, and all but one responded satisfactorily to the appeal for the president's fund.

Respectfully submitted,

S. A. ANDERSON, M.D., *Councilor*

SIXTH DISTRICT

To the House of Delegates:

The Sixth District, which is composed of the Shawnee County Medical Society, numbered 187 members at the end of 1954. Regularly scheduled scientific programs have been well attended.

The following projects were undertaken during the past year:

1. Assignment of all members to civil defense teams accepted by local authorities as a working unit of the over-all civil defense program.

2. Patch testing of 189 students at a Topeka grade school in an effort to evaluate this type of testing for tuberculosis.

3. Administering Salk vaccine to second and fourth grade students at all schools in the county and preparing to do so again in 1955 if requested to perform the service.

4. Presentation of two radio programs over station WREN to explain the Society and its activities to the general public.

5. Providing speakers for lay groups on a variety of subjects, cancer, polio, heart disease, and public health.

Respectfully submitted,

FLOYD C. TAGGART, M.D., *Councilor*

SEVENTH DISTRICT

To the House of Delegates:

Medical matters have proceeded smoothly in the Seventh District this year. There have been no major crises or catastrophies.

Losses to the armed forces have been few and scattered. While these are painful where they occur, the remaining men in each instance have dug in and filled the vacancy. A few new men have moved into the district.

Attendance at circuit courses and other postgraduate activities has been good. Generally, the caliber of local meetings has been high.

New hospitals are functioning in Burlington and Council Grove.

By and large, professional relationships within the group in this district have been exceptionally good. It is hoped that this may continue and increase and may be general over the state.

Respectfully submitted,

Edward J. Ryan, M.D., *Councilor*

EIGHTH DISTRICT

To the House of Delegates:

Physicians in the Eighth District have enjoyed a pleasant and eventful year with a few exceptions which, thanks to individual members, were settled

on a local basis. All except one of the men called to military service have returned to practice.

Some effort has been made to consolidate two societies in an attempt to have better society meetings, but nothing has been accomplished to date.

Circuit courses held in Arkansas City have been good and well attended. We have had an excellent representation from neighboring Oklahoma counties at these courses.

Your councilor has attended all meetings of the Council and has enjoyed this participation in Society affairs. It has been a pleasure to have served as your councilor.

Respectfully submitted,

James E. Hill, M.D., *Councilor*

NINTH DISTRICT

To the House of Delegates:

This district was one from which a few counties were subtracted and a few were added. There have been no difficulties encountered as a result of the change. Things have gone very smoothly. A few rather minor items have required the attention of the councilor and, due to excellent co-operation of members of the district, have been resolved without any particular difficulty.

A very excellent ladies' night party was held in Concordia by the Cloud County Medical Society. President Marmaduke McComas presided. He introduced several distinguished guests including President Murray Eddy and Past President L. S. Nelson, Sr. The district councilor was also invited and found that a good time was had by all. President-Elect John Porter made his usual excellent impression when called upon to say a few words.

The Ninth District councilor plans to visit northern counties in the district during the coming year. If any societies in that area are desirous of a visit, please communicate.

Respectfully submitted,

L. S. Nelson, Jr., M.D., *Councilor*

TENTH DISTRICT

To the House of Delegates:

The counties of the Tenth District are well organized, and things have gone along nicely during the year. The Bethel Clinic and the Axtell Clinic at Newton have new clinic buildings under construction.

I have attended meetings with the different societies in this district and believe the matter of greatest interest to us is anticipation of and preparation for the meeting of The Kansas Medical Society in Hutchinson in May. We believe it will be a fine meeting,

and we are doing everything we can to contribute to its success.

Respectfully submitted,
H. M. Glover, M.D., *Councilor*

ELEVENTH DISTRICT

To the House of Delegates:

Various activities have taken place in the Eleventh District, the major one being the completion of the Sedgwick County Medical Society Building with the occupancy therein of the Society offices and the Medical Service Bureau, with an auditorium for the use of the Society.

There has also been an increased amount of activity in this district in the field of public relations through joint meetings with the Ministerial Association and various P.-T. A. groups and a program devoted to forensic medicine.

The regular county meetings have been well attended with excellent programs presented.

Respectfully submitted,
Norton L. Francis, M.D., *Councilor*

TWELFTH DISTRICT

To the House of Delegates:

The new Twelfth District has shown much more activity than the old Eleventh District. Monthly meetings have been held by the Pratt County Medical Society and by the South Central Tri-County Medical Society, which is composed of Barber, Harper, and Sumner counties. This group generally meets at Harper, and they have good programs and excellent attendance.

Active participation of the members of this area in Kansas Medical Society activities will increase as the result of the redistricting, I am sure. The councilor has attended most of the meetings in both localities.

Respectfully submitted,
Cyril V. Black, M.D., *Councilor*

THIRTEENTH DISTRICT

To the House of Delegates:

Additions have been quite satisfactory in the Thirteenth District for the past year. Two of our members, Dr. Alden Flanders and Dr. Jack Hilgers of Hays, have returned from military service, and another of our members, Dr. W. J. Smith of Stockton, has been called into the Army.

A new hospital has been opened at Plainville, and additions are under way in the hospital at Russell. We have had no pressing problems in the last year, and we have been able to reach an agreement on all items of business that have come up.

Respectfully submitted,
L. W. Reynolds, M.D., *Councilor*

FOURTEENTH DISTRICT

To the House of Delegates:

I have contacted all the component societies of this district and am glad to report that I feel there is a healthy interest in medicine and medical affairs. Very few county societies have regular monthly meetings and some have no regular meetings, but most of the societies will average three or four meetings a year.

I believe that the standards of medicine are maintained at a high level and that there is healthy interest in postgraduate education. Meetings sponsored by the state Society have been quite well attended.

Respectfully submitted,
Justin A. Blount, M.D., *Councilor*

FIFTEENTH DISTRICT

To the House of Delegates:

The new Fifteenth District now is composed of eight counties: Clark, Comanche, Edwards, Ford, Gray, Kiowa, Meade, and Seward. Because of the small number of physicians in six of the counties, no local county societies exist there.

During the past year there has been an increase in the number of physicians and in hospital facilities in the various counties in this district.

The two societies, Ford and Seward, hold monthly meetings in conjunction with their monthly hospital staff meetings. In addition, the Ford County Society has three scientific meetings a year, inviting all physicians in the district.

This year, the University of Kansas School of Medicine postgraduate extension courses are held in Garden City. These monthly meetings are well attended and provide an opportunity for occasional society and medical discussions.

Respectfully submitted,
R. G. Klein, M.D., *Councilor*

SIXTEENTH DISTRICT

To the House of Delegates:

At the meeting of the House of Delegates last May the state was divided into 17 districts and the old Ninth District became the Sixteenth District. It corresponds in area to that of the Northwest Kansas Medical Society.

There have been two meetings of the Council called by Dr. Eddy, both of which were attended by your councilor.

During the past year seven new physicians have located in the district. They are as follows: Dr. S. P. Hornung, Norton; Dr. William Tappen, Atwood; Dr. Ernest R. Cram, St. Francis; Dr. James Harold Coffman, Oberlin; Dr. Kobler, Hill City; Dr. J. A.

Cuadrado, Colby, and Dr. Roger Eakins, Goodland.

The refresher courses, held each month in Colby, have been well attended.

The ladies of the Auxiliary, with their husbands, had the pleasure of entertaining Dr. and Mrs. W. Clarke Wescoe at a wild game dinner with Dr. J. H. A. Peck of St. Francis supplying the game. Dr. and Mrs. Murray Eddy were guests in March.

It has been a pleasure to serve as your councilor for this year.

Respectfully submitted,

J. L. Jenson, M.D., *Councilor*

SEVENTEENTH DISTRICT

To the House of Delegates:

From a local standpoint things have been very quiet in this district the past year. We have had no general district meetings. The response to the post-graduate course is excellent and, weather permitting, a large group is present at each meeting.

There have been few changes in the practicing physicians in this area during the past year.

Respectfully submitted,

H. Preston Palmer, M.D., *Councilor*

Committee Reports

ALLIED GROUPS

L. F. Schmaus, Iola, Chr.; C. M. Alderson, Dodge City; W. R. Beine, Coffeyville; C. H. Benage, Pittsburg; R. D. Dickson, Topeka; G. E. Kassebaum, El Dorado; Harry Lutz, Augusta; R. R. Snook, McLouth.

To the House of Delegates:

No formal meeting of this committee was called, but a questionnaire was written and sent to each member. A study of these has resulted in the following recommendations:

1. Each county society should hold at least one joint meeting each year with allied professions, especially dentists and druggists, except under circumstances where joint meetings are not practical. In such meetings many minor misunderstandings could be ironed out, producing more amiable relationships and better service to the public.

2. An inter-professional council should be established in each county to accomplish the above.

Respectfully submitted,

Lyle F. Schmaus, M.D., *Chairman*

ANESTHESIOLOGY

P. H. Lorhan, Kansas City, Chr.; L. L. Bresette, Kansas City; H. J. Brown, Winfield; R. S. McKee, Leavenworth; C. D. McKeown, Wichita; R. T. Parmley, Wichita; E. M. Sutton, Salina; F. C. Taggart, Topeka.

To the House of Delegates:

The committee held no formal meetings but conducted most of its affairs by personal communication and correspondence.

The Committee on Anesthesiology joined with the Kansas Society of Anesthesiology in extending

an invitation to the American Society of Anesthesiology to hold its 1956 meeting in Kansas City. This was accepted by the national society's board of directors. The dates for this meeting are October 7 through October 12, 1956.

The committee and The Kansas Medical Society were instrumental in helping to arrange the post-graduate course in anesthesiology. The past course was one of the most successful which has ever been presented. At this time I would personally like to extend my sincere appreciation to the committee and the members of The Kansas Medical Society for their co-operation.

During the past year two meetings of the "Study Commission" were held. These meetings were in Emporia and Wichita, and cases were presented by members of the Kansas Society of Anesthesiology. Again I would like to reiterate, as I have in the past, that this should be a function of The Kansas Medical Society. The Kansas Medical Society should adopt a policy to the effect that all operation deaths should be reported and brought to the attention of the Committee on Anesthesiology. The suggested committee plan has previously been submitted to the Society.

In this age of constant turmoil, with the possibilities of world conflict being ever present, your chairman has been interested in the Civil Defense program. The Committee on Anesthesiology is aware of the shortage of anesthesiologists. Nevertheless, to provide the maximum of medical care, it is imperative that The Kansas Medical Society be cognizant of this, and the inclusion of an anesthesiologist on the Civil Defense table of organization is considered desirable. To alleviate the deficiency or shortage, the committee and the members of the Kansas Society of Anesthesiology have offered and are offering individual instruction to physicians of Kansas who are

interested in acquiring further knowledge in the administration of anesthetics. Information regarding places of instruction may be obtained from the executive office.

Since we have not had an anesthesiologist on the scientific program for the past three years, the committee would appreciate that the next scientific program chairman consider the possibility of inviting an anesthesiologist as a guest speaker. The committee shall be glad to co-operate by submitting a list of prospective speakers for consideration.

The committee recommends the adoption of the following resolution on reporting operating room deaths:

WHEREAS, the number of deaths has been increasing throughout the past years, and

WHEREAS, this is assuming greater importance as is attested by numerous reports and papers on "Cardiac Arrest" appearing in the various medical journals, and

WHEREAS, the number of operating room deaths should be the concern of the entire medical profession, therefore be it

Resolved, that The Kansas Medical Society adopt the following resolution:

Be It Resolved that all cases of cardiac arrest which occur in the operating room or immediate postoperative period be reported to the executive office of The Kansas Medical Society for submission to the Committee on Anesthesiology.

Our second recommendation is that an anesthesiologist be asked to serve as a guest speaker at the next annual meeting.

Respectfully submitted,

Paul H. Lorhan, M.D., *Chairman*

AUXILIARY

I. J. Waxse, Oswego, Chr.; E. M. Harms, Wichita; E. R. Millis, Kansas City; C. E. Partridge, Emporia; C. O. West, Kansas City.

To the House of Delegates:

The Committee on Auxiliary met at the University of Kansas Medical Center in October 1954 with Doctors Harms, West, Millis, and Waxse present. Our gracious president of the Auxiliary, Mrs. E. R. Millis, was also present, as was Mrs. I. Joseph Waxse, past president.

Consideration was given the suggestion that each married member of The Kansas Medical Society pay two dollars Auxiliary dues for his wife (one dollar each county and national) when he pays his own Society dues. This would in effect increase the number of Auxiliary members and particularly the roll of members-at-large. The matter was tabled for further study.

Approval was given the Auxiliary to sponsor

March 30, 1955, as Doctors' Day in Kansas. The theme of the Auxiliary this year, "A personal physician for every doctor's family" was thought to be quite timely and good.

As was reported last year, the Auxiliary again feels that it would like to do more for The Kansas Medical Society in a liaison capacity in such fields as public relations and mental health, for example.

It was agreed by the committee that the Auxiliary has done a fine job in nurse recruitment, *Today's Health* promotion, and aiding in the drive for funds for the American Medical Education Foundation.

Doctor, don't forget to subscribe to *Today's Health*, the only authentic "health" magazine published. No reception room should be without one or more copies.

Respectfully submitted,

I. Joseph Waxse, M.D., *Chairman*

BLUE SHIELD FEE SCHEDULE

N. L. Francis, Wichita, Chr. ENT; H. O. Anderson, Wichita, Orthopedics; C. M. Barnes, Seneca, General Practice; W. L. Beller, Topeka, Radiology; D. E. Gray, Topeka, Obstetrics and Gynecology; G. F. Gsell, Wichita, Eye; A. G. Isaac, Newton, Urology; B. I. Krehbiel, Topeka, Pediatrics; W. O. Martin, Topeka, Anesthesiology; E. J. Ryan, Emporia, Internal Medicine; L. L. Saylor, Topeka, Surgery; B. E. Stofer, Wichita, Pathology; H. S. Blake, Topeka, Blue Shield.

To the House of Delegates:

This committee has not had as many calls upon its services this year as it has had in the past; in fact, it has been necessary to have only one meeting.

This meeting was devoted to considering and exploring the principles and fees which would be related to the establishment of a \$6,000 income level policy for distribution. It was the committee's opinion that further exploration of the factors involved in presenting such a policy to the public, and to the participating physicians, should be made.

Respectfully submitted,

Norton L. Francis, M.D., *Chairman*

BLUE SHIELD RELATIONS

C. S. Joss, Topeka, Chr.; Glen Ashley, Chanute; K. F. Bascom, Manhattan; E. S. Brinton, Wichita; W. E. Brownlee, Hutchinson; O. R. Cram, Larned; P. M. Hulett, Anthony; G. E. Manahan, Lawrence; D. E. McCoy, Oberlin; J. C. Mitchell, Salina; A. L. Nichols, Hiawatha; E. B. Scagnelli, Dodge City; J. E. Seitz, Wakeeney; L. N. Speer, Kansas City; S. L. VanderVelde, Emporia; M. W. Wells, Winfield; H. M. Wiley, Garden City.

To the House of Delegates:

The Blue Shield Relations Committee was increased from 12 to 17 members during 1954 because of the change in the number of councilor districts. The only meeting of the full committee was held during the annual session of the state society.

During the past year, more emphasis was placed on district meetings and county society meetings. The non-group enrollment program initiated in 1954 was discussed, and waiting period provisions were highlighted. The Blue Shield proposal for a service contract with higher income limits was also discussed at length with the profession.

The districts have nominated members for election by the Blue Shield Board at the annual meeting. It will also be the duty of the Committee on Blue Shield Relations to elect four doctors of medicine to the Blue Cross Board.

Plans are to hold two meetings annually with the full committee and two meetings per year with each district. This will provide ample discussion time for a realistic two-way exchange of information.

The committee is in a favorable position to become an effective voice for the medical profession in its relationship to Blue Shield.

Respectfully submitted,

C. S. Joss, M.D., *Chairman*

CHILD WELFARE

W. H. Crouch, Topeka, Chr.; M. S. Boyden, Lawrence; D. R. Davis, Emporia; H. P. Jubelt, Manhattan; G. M. Martin, Topeka; F. L. Menehan, Wichita; H. C. Miller, Kansas City; E. G. Padfield, Salina; E. T. Siler, Hays; L. N. Speer, Kansas City; T. E. Young, Winfield.

To the House of Delegates:

Your committee has had two meetings during the past year. The first was held at the close of the 1954 annual meeting and the second was on February 13, 1955.

The committee continued its study of accident prevention and plans a further study of this subject in a joint effort with the Kansas State Pediatric Society and the Kansas State Board of Health.

A subcommittee was appointed to study the school health program with special emphasis on the immunization program.

The committee passed a resolution, ultimately approved by the Council, endorsing the program of mass immunization of children in the first and second grades in the state if 1954 trial evaluations indicate some measure of protection against paralytic polio and provided each county medical society may elect to participate. Further study of this program will be made by the committee.

Respectfully submitted,

W. H. CROUCH, M.D., *Chairman*

CONSERVATION OF EYESIGHT

H. E. Morgan, Newton, Chr.; B. J. Ashley, Topeka; F. N. Bosilevac, Kansas City; L. L. Calkins, Kansas City; D. O. Howard, Wichita; M. S. Lake, Salina; D. T. Loy, Great Bend; W. M. Scales, Hutchinson; D. P. Trimble, Emporia; D. D. Vermillion, Goodland.

To the House of Delegates:

The Committee on Conservation of Eyesight has held one meeting during the current year. Another meeting is planned, before the annual session of The Kansas Medical Society, should matters come before the committee necessitating action.

The committee has, as always, attempted to serve in an advisory capacity to the Council and to the Kansas Division of Services for the Blind.

The committee has recommended and approved Dr. Karl W. Stock, Topeka, as state supervising ophthalmologist. Revision of the list of approved ophthalmologists is in progress. This, it is hoped, will make for easier and better service by the Kansas Division of Services for the Blind.

The possibility of a glaucoma diagnostic survey, similar to that in Cleveland, Ohio, was explored, and recommendations were made.

A subcommittee was appointed to check the availability of pamphlets on eye conditions to be used by social workers for distribution to lay persons.

The committee suggested that all student teachers in state universities and colleges be given a two-hour lecture in the use of the Snellen chart in schools. It was felt that this would ultimately supply a group of persons trained to give these tests.

The committee advises that oxygen not be used in premature infants except as a life-saving measure and then only in small amounts, and that all premature babies have a fundus examination within the first two days and at the time of discharge from the hospital. All this is an attempt to prevent retrolental fibroplasia and to diagnose it early.

Respectfully submitted,

H. E. Morgan, M.D., *Chairman*

CONSERVATION OF HEARING AND SPEECH

G. O. Proud, Kansas City, Chr.; C. W. Armstrong, Salina; E. L. Gann, Emporia; C. L. Gray, Wichita; J. H. Johnson, El Dorado; C. R. Kempthorne, Manhattan; W. D. Pitman, Pratt; M. J. Rucker, Sabetha; M. J. Ryan, Kansas City; L. B. Spake, Kansas City.

To the House of Delegates:

Due to the fact that the members of this committee are numerous and located far from one another, a formal meeting was not held during the past year. The members were polled by mail.

The principal point under discussion was the type

of field representative to be chosen to aid in school health programs. It was the feeling of most members of the committee that it was not necessary to retain an audiologist. Most of the members agreed that a specially trained technician would be adequate for the position.

The only other activities of the committee were those which had been instigated by the former chairman, Dr. L. B. Spake.

Respectfully submitted,

G. O. Proud, M.D., *Chairman*

CONSTITUTION AND RULES

A. W. Fegty, Wichita, Chr.; W. M. Brewer, Hays; L. D. Johnson, Mission; L. C. Joslin, Harper; C. T. Ralls, Winfield; C. E. Vestle, Humboldt; Clyde Wilson, Emporia.

To the House of Delegates:

Two amendments to the By-Laws of The Kansas Medical Society have been proposed to the Committee on Constitution and Rules during the past year. They are published here for the information of all members of the Society.

1. By-Laws, Chapter VI, Section 1—Election of Officers. This section shall be amended in Lines 9, 10, and 11 to read as follows: "No past president may serve on more than two consecutive annual nominating committees, AND NO PAST PRESIDENT CURRENTLY HOLDING AN ELECTIVE OFFICE SHALL BE ELIGIBLE TO BE ELECTED TO THE COMMITTEE."

Comment: Criticism has been made that it is unfair to elect a past president holding an elective office to the Nominating Committee, which might feel free to place the same person in nomination for re-election.

The Committee on Constitution and Rules recommends the adoption of this amendment.

2. By-Laws, Chapter XI, Section 2—Committees. This section shall be amended in Line 6 after the word "Society" by the addition of the following: "Members of standing committees shall be appointed for terms of three (3) years, one-third of the committee membership to be appointed annually, EXCEPT that at the first year of the extended appointments, one-third shall be appointed for one (1) year, one-third for two (2) years, and one-third for three (3) years. In case of special committees, the same formula of appointments shall be used when desirable or necessary for the functions of the committee."

Comment: Under the present system it is recommended that a portion of each committee be reappointed, while under this amendment a majority of each committee will be retained. This should permit

of no interruption in the course of work or problems begun or attempted. It also relieves each incoming president of the arduous problem of appointing entire committees, leaving to his discretion desirable members to be added. If adopted, this amendment will give the incoming president the important function of appointing some members for one year, others for two years, and others for full three-year terms.

The committee offers this for consideration of the House of Delegates. It may be voted upon or referred to the Council for consideration with recommendation for submission to vote next year.

Respectfully submitted,

A. W. Fegty, M.D., *Chairman*

CONTROL OF CANCER

R. E. Speirs, Dodge City, Chr.; J. P. Berger, Wichita; C. G. Bly, Kansas City; T. P. Butcher, Emporia; A. M. Cherner, Hays; A. A. Fink, Topeka; W. A. Grosjean, Winfield; H. L. Hiebert, Topeka; D. A. Kendall, Great Bend; W. J. Kiser, Wichita; J. H. Lathrop, Concordia; O. F. Prochazka, Liberal; R. H. Riedel, Topeka; N. P. Sherwood, Lawrence; G. M. Tice, Kansas City; L. E. Vin Zant, Wichita; H. M. Wiley, Garden City.

To the House of Delegates:

The Committee on Control of Cancer has held three meetings in Wichita during the year. Members have responded in an excellent manner, and all have taken an active part in discussions.

The most outstanding activity of the committee was the planning of the Seventh Annual Mid-West Cancer Conference held in Wichita, March 24 and 25, 1955. Dr. H. L. Hiebert was responsible for getting together such an outstanding array of speakers, and Dr. J. P. Berger and Dr. L. E. Vin Zant handled the local arrangements and publicity. To these men we all owe a great deal as they spent many hours arranging this outstanding activity.

The Committee on Control of Cancer also serves as a Medical and Scientific Committee for the American Cancer Society, Kansas Division. All members have taken an active part and have done their best to advise on the type of program they consider best for the Kansas Division to follow. It was necessary this year to reconsider the entire program because requests for aid and assistance and various projects have exceeded the budget. Some programs supported in the past will have to be dropped or curtailed so that new projects may be developed. All members of the committee regret this necessity because many programs supported completely in the past by the Kansas Division will undoubtedly suffer as the result of their loss of assistance.

The chairman wishes to take this opportunity to

PRO-BANTHINE® FOR ANTICHOLINERGIC ACTION

A Combined Neuro-Effector and Ganglion Inhibitor

Pro-Banthine consistently controls gastrointestinal hypermotility and spasm and the attendant symptoms.

Pro-Banthine is an improved anticholinergic compound. Its unique pharmacologic properties are a decided advance in the control of the most common symptoms of smooth muscle spasm in all segments of the gastrointestinal tract.

By controlling excess motility of the gastrointestinal tract, Pro-Banthine has found wide use¹ in the treatment of peptic ulcer, functional diarrheas, regional enteritis and ulcerative colitis. It

is also valuable in the treatment of pylorospasm and spasm of the sphincter of Oddi.

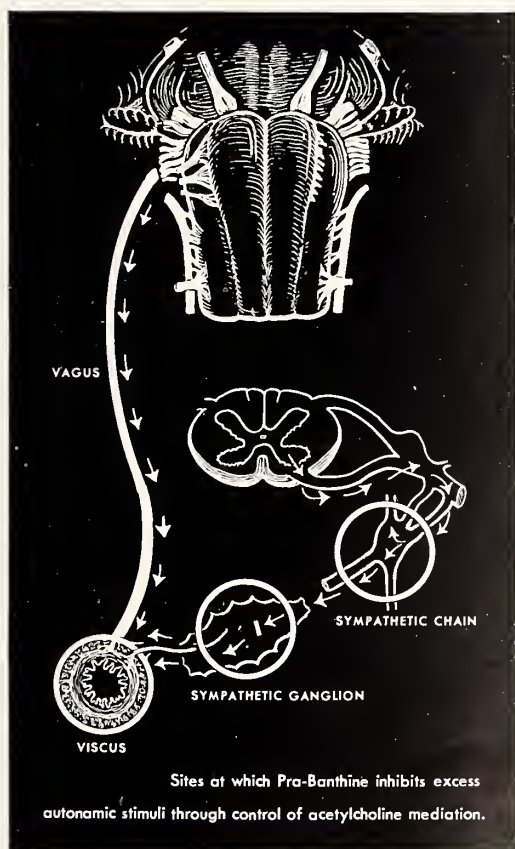
Roback and Beal² found that Pro-Banthine orally was an "inhibitor of spontaneous and histamine-stimulated gastric secretion" which "resulted in marked and prolonged inhibition of the motility of the stomach, jejunum, and colon. . . ."

Therapy with Pro-Banthine is remarkably free from reactions associated with parasympathetic inhibition. Dryness of the mouth and blurred vision are much less common with Pro-Banthine than with other potent anticholinergic agents.

In Roback and Beal's² series "Side effects were almost entirely absent in single doses of 30 or 40 mg. . . ."

Pro-Banthine (β -diisopropylaminoethyl xanthene-9-carboxylate methobromide, brand of propantheline bromide) is available in three dosage forms: sugar-coated tablets of 15 mg.; sugar-coated tablets of 15 mg. of Pro-Banthine with 15 mg. of phenobarbital, for use when anxiety and tension are complicating factors; ampuls of 30 mg., for more rapid effects and in instances when oral medication is impractical or impossible.

For the average patient one tablet of Pro-Banthine (15 mg.) with each meal and two tablets (30 mg.) at bedtime will be adequate. G. D. Searle & Co., Research in the Service of Medicine.



1. Schwartz I. R.; Lehman, E.; Ostrove, R., and Seibel, J. M.: *Gastroenterology* 25:416 (Nov.) 1953.

2. Roback, R. A., and Beal, J. M.: *Gastroenterology* 25:24 (Sept.) 1953.

SEARLE

thank all members for their splendid co-operation during the past year.

Respectfully submitted,
R. E. Speirs, M.D., *Chairman*

CONTROL OF TUBERCULOSIS

A. L. Ashmore, Wichita, Chr.; Andre Baude, Topeka; H. L. Bogan, Baxter Springs; R. I. Canute-son, Lawrence; Vale Page, Plainville; Charles Pokorny, Halstead; W. G. Rinehart, Pittsburg; C. F. Taylor, Norton; F. A. Trump, Ottawa; C. J. W. Wilen, Manhattan.

To the House of Delegates:

Your Committee on Control of Tuberculosis did not meet during the past year as no matters requiring the attention of the committee were brought to the attention of the chairman.

Respectfully submitted,
A. L. ASHMORE, M.D., *Chairman*

EMERGENCY MEDICAL CARE

D. P. Trees, Wichita, Chr.; W. H. Algie, Kansas City; G. W. Hammel, El Dorado; P. B. Leffler, Pittsburg; J. W. Manley, Kansas City; J. M. Mott, Topeka; W. A. Smiley, Jr., Junction City; J. F. Thurlow, Hays; Nathaniel Uhr, Topeka.

To the House of Delegates:

No action was requested of the Committee on Emergency Medical Care during the past year, so no meetings were held.

Respectfully submitted,
D. P. TREES, M.D., *Chairman*

ENDOWMENT

J. W. Randell, Marysville, Chr.; S. G. Ashley, Chanute; J. O. Austin, Garden City; L. J. Beyer, Lyons; C. V. Black, Pratt; H. O. Bullock, Independence; T. P. Butcher, Emporia; V. E. Chesky, Halstead; L. H. Coale, Kansas City; W. M. Cole, Wellington; W. S. Fast, Atchison; R. W. Fernie, Hutchinson; J. L. Grove, Newton; D. G. Holcomb, Liberal; Dwight Lawson, Topeka; G. D. Marshall, Colby; B. P. Meeker, Wichita; J. C. Mitchell, Salina; M. C. Ruble, Parsons; H. B. Russell, Great Bend; E. A. Smiley, Junction City; G. I. Thacher, Waterville; N. V. Treger, Topeka; S. L. VanderVelde, Emporia.

To the House of Delegates:

The chairman has appreciated the very fine work of the members of the Committee on Endowment this year.

The real goal for the year was to assist in clearing

up the indebtedness of the University of Kansas School of Medicine on the Student Union Building and the Continuation Study Center at the University of Kansas Medical Center.

I have been unable to get accurate figures on the amount contributed by the doctors of Kansas to the American Medical Education Foundation this year. It is hoped that each one who contributed asked that his donation be earmarked for our Kansas school. I am sure that the University of Kansas School of Medicine has appreciated our assistance.

Although we all feel an obligation to the schools from which we were graduated, I believe that we also have a duty to support the school of our adoption. If every Kansas physician were to set aside a portion of his income for his own school and for his school of adoption, the University of Kansas School of Medicine, we could provide for continuing medical education without subsidization.

This committee recommends that the House of Delegates take definite action at its 1955 session to make a sizable annual contribution to our Kansas medical school.

Respectfully submitted,
J. W. Randell, M.D., *Chairman*

EXPERT TESTIMONY

C. E. Joss, Topeka, Chr.; E. J. Frost, Wichita; J. L. Lattimore, Topeka; C. D. McKeown, Wichita.

To the House of Delegates:

The Committee on Expert Testimony has been inactive during the past year as no requests for its services have been received.

Respectfully submitted,
C. E. Joss, M.D., *Chairman*

GENERAL PRACTICE AWARD

H. M. Glover, Newton, Chr.; C. W. Bowen, Topeka, Pres. Kansas Acad., Vice-Chr.; G. E. Burket, Jr., Kingman; J. P. Haigler, Hays; Lawrence E. Leigh, Overland Park; F. N. White, Russell.

To the House of Delegates:

This is a new committee in our Society, and I received notice of my appointment as chairman on May 25, 1954. Our Society has never before submitted a name to the American Medical Association which, at its annual mid-winter meeting, selects some doctor as General Practitioner of the Year. No formal meeting of the committee has been held during the year.

On September 23, 1954, a letter was sent from the office of The Kansas Medical Society to the secretaries of all county medical societies, outlining the plan and asking that each county society, if it had a suitable physician, recommend him to this committee

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 answer to **dust allergies**
 in the home!

The heart of the Filter Queen air-purifying system is an exclusive, cellulase *Filter Cone* that is so sure, so effective it has been selected to help filter the air in U. S. atomic research laboratories. In fact, this *Filter Cone* will even remove tobacco stain from a puff of smoke!

In thousands of homes, Filter Queen has replaced old-fashioned, unhealthy methods of sanitizing with highly favorable results: Filter Queen not only filters room air and eliminates dust disturbance, but through a built-in Medication Chamber disperses medicinal vapors into the room while the patient goes about her ordinary household routine.

You must really see — to believe — what Filter Queen can do for your dust-allergic patients. We will be glad to arrange for a presentation of the Filter Queen System at any time convenient to you — in your office or home.

Filter Queen carries all four approval seals of the American Medical Association, Good House-keeping Magazine, Parent's Magazine, and Underwriters' Laboratories.

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for consideration and send in data to support his eligibility.

In reply to this letter only two names were suggested, one verbally without any further follow-up and the other nicely presented with complete biographical data and a statement of his qualifications. About November 7, 1954, I received this material from the Cowley County Medical Society, recommending this honor for Edgar Ernest Brooks, M.D., of Burden. Since it was too late to process the information for the 1954 mid-winter A.M.A. meeting, it was planned to expand the material and get it into a little better shape for presentation in 1955 if the committee so decided.

Now I have a report of the recent death of this fine Kansas physician which, of course, terminates the matter for the time being. It is planned to send out information and a questionnaire to the secretaries of the county societies within the next few weeks, thus getting an earlier start for the coming year, and it is hoped we can have a name ready to present by fall.

I hope those of you who are interested will read the article in the various Kansas papers and in our *Journal of the American Medical Association* in regard to Carl B. Pace, M.D., Greenville, North Carolina, who was named General Practitioner of the Year by the American Medical Association this year.

I think we should not submit a name unless we have a worthy individual and can prepare suitable material for presenting his name.

Respectfully submitted,

H. M. Glover, M.D., *Chairman*

HISTORY

R. R. Melton, Marion, Chr.; W. M. Mills, Topeka, Vice-Chairman; W. L. Anderson, Atchison; A. E. Bair, Independence; H. C. Clark, Wichita; C. C. Nesselrode, Kansas City; A. K. Owen, Topeka; L. L. Saylor, Topeka; M. O. Steffen, Great Bend; C. F. Taylor, Norton.

To the House of Delegates:

Your committee has explored numerous projects which have the approval of the committee by way of correspondence. There has been no formal meeting of the committee, but several subcommittee meetings have been held.

The desire for preserving the history of medicine in Kansas has often been expressed. Each succeeding committee for many years has supported that opinion. Failure to achieve tangible benefits from the many hours of planning that have gone into this subject has resulted from two factors, first that volunteers cannot be relied upon to achieve a coordinated effort, and second that the cost of professional services has been considered prohibitive.

With the realization of those two factors, your present committee explored the possibility of discovering a somewhat different formula that might achieve some measure of success. We therefore have the following to recommend, a portion of which will require action by the House of Delegates.

1. This committee continues its urgent request for physicians to send to The Kansas Medical Society any material or equipment or literature that is significant to the history of medicine. It is hoped in this way to begin to assemble an archive of documentary written material that might eventually be assembled into a readable history and an exhibit on pioneer medicine.

2. Your committee has contacted the Kansas Historical Museum. If sufficient material of historical interest to medicine can be assembled, the museum will set aside a room or a portion of a room to house this exhibit as a unit. For this purpose old instruments, books, and equipment will be most gratefully received. Again, your committee solicits the cooperation of this Society in its effort to assemble this type of exhibit.

3. A beginning has been made and further effort will be expended in the coming year toward assembling and preserving the documentary history of The Kansas Medical Society. Files of special historical interest such as records of the more dramatic events in the history of this Society are being assembled. Some thought has already been given toward preserving this material against the ravages of time or the accident of fire.

4. The state, in anticipation of its 100th anniversary, is preparing a four-volume history of Kansas. The editors of this book have authorized The Kansas Medical Society to prepare a chapter on the history of medicine in Kansas, which material is now assembled, and the manuscript is in preparation. It will be submitted some time during the summer.

5. The biggest project of this committee is the establishment of a formula whereby an authoritative and a relatively complete history of medicine can be written at a cost far less than would be possible through the employment of personnel to accomplish this task. Your committee decided that if a qualified graduate student in history would be willing to select as the topic for his thesis "A Century of Medicine in Kansas," and if The Kansas Medical Society might offer a scholarship to such student, this history would be prepared with a great saving in cost. As a result of this proposal, the chairmen and others of the committee held a meeting last fall at the University of Kansas with Chancellor Murphy, the dean of the graduate school, the head of the department of history, and several other members of the faculty. The following proposal was agreed upon:



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... brings quick, sure relief. Just two or three SELSUN applications relieve itching, burning scalps. Four or five more completely clear scaling. Then each SELSUN application keeps the scalp free of scales for *one to four weeks*. And SELSUN completely controls 81-87% of all seborrheic dermatitis cases, 92-95% of dandruff cases.

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A CENTURY OF MEDICINE IN KANSAS

- I. Objective: A historical account of The Kansas Medical Society and of the role of members of the medical profession in the history of Kansas.
- II. Term of Research Project: 1955-58
- III. Sponsors: The Kansas Medical Society
The University of Kansas
- IV. Financial Support:
 - A. Equal support by each of the sponsors for a period of three years; each to provide not to exceed \$900 per year.
 - B. Costs of publication to be borne by The Kansas Medical Society.
- V. Professional Direction:
 - A. The general responsibility shall be assumed by the Department of History of the University of Kansas.
 - B. The specific responsibility shall rest with the staff member whose primary research and teaching interests are in the fields of Kansas and western history.
 - C. The Department of History recognizes the desirability of consultation with the proper officials of The Kansas Medical Society and suggests that these, together with the chancellor of the University, the dean of the graduate school, and recognized scholars in the fields of the history of science and the history of medicine might be constituted an advisory committee.
- VI. The Project Scholar:
 - A. Qualifications: The project scholar shall:
 1. Be a candidate for doctorate in history
 2. Possess adequate preparation in science as well as in history
 3. Possess promise of some literary ability
 - B. Basic conditions: The project scholar shall have:
 1. Complete freedom in the pursuit of materials bearing upon the problem and in the use and interpretation of the data which is accumulated.
 2. Full ownership and control of notes and summaries, but all recordings, microfilm copies, letters, diaries, and the like shall become the property of the sponsors if the owners are willing to dispose of them.
 3. Access to the materials in the possession of The Kansas Medical Society that bear upon its history.
 4. Complete freedom to continue research and publication in the field after the pub-

lication of the study and the termination of the project.

5. Active assistance in securing a professional position that is consistent with his training and research interests.

Under the terms of this agreement with the University of Kansas, we are guaranteed that the thesis of book length will be completed in 1958, approximately one year before the 100th anniversary of The Kansas Medical Society. In case anything occurs whereby the graduate student fails to complete his work, the project will be continued by a member of the faculty under the same financial terms.

The total scholarship will be \$200 a month for nine months during each of three years, beginning this September. The University of Kansas has most graciously offered to pay one-half this scholarship. The cost to The Kansas Medical Society, therefore, will be \$900 a year for each of the following three years, or a total of \$2,700.

This cost brings the book up to the point of publication. That amount cannot be determined until the manuscript is completed and it is known how many copies will be desired. This committee believes it advisable that the Society consider at this time the possibility of purchasing a copy for each member of the Society and sufficient additional copies to supply libraries in Kansas and certain other significant libraries in America. It is estimated the book will cost about \$4.00 per copy. Your committee believes, when the book is published, that if dues for one year were increased by \$5.00, this would cover the publication cost.

Of immediate necessity is approval of the scholarship plan. This committee respectfully requests the House of Delegates to approve an annual expenditure of \$900 for each of the next three years for this purpose.

Respectfully submitted,
R. R. MELTON, M.D.,
W. M. MILLS, M.D.,
Co-chairmen

HOSPITAL SURVEY

J. H. A. Peck, St. Francis, Chr.; A. C. Armitage, Hutchinson; P. L. Beiderwell, Belleville; W. J. Biermann, Wichita; A. P. Cloyes, El Dorado; M. J. Cox, Dodge City; A. P. Gearhart, Wichita; E. R. Gelvin, Concordia; L. C. Hays, Cedar Vale; J. L. Jenson, Colby; L. W. Patzkowsky, Kiowa; P. A. Pettit, Paola; A. J. Rettenmaier, Kansas City; F. C. Shepard, Clay Center; C. D. Snyder, Winfield.

To the House of Delegates:

Members of your Committee on Hospital Survey

Stress Fortify

the patient with infections

Therapeutic amounts of B-complex, C and K vitamins should be administered during periods of physiologic stress, including infections susceptible to such potent antibiotics as Terramycin,^{®*} Tetracycl^{®†} and penicillin. The National Research Council recommends this as a routine measure in the management of patients with severe infections.

^{*} BRAND OF OXYTETRACYCLINE
[†] BRAND OF TETRACYCLINE



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Division, Chas. Pfizer & Co., Inc.

wish to present an over-all picture of hospital service in the state. On the whole, the people of Kansas are well supplied with hospital beds.

In large hospitals in metropolitan centers the occupancy rate runs between 75 and 90 per cent. The rate is somewhat lower in small hospitals.

Having a number of small hospitals in a state such as Kansas, which is predominantly rural, is a comparatively new venture in medical practice. Many adjustments must necessarily be made in perfecting such hospital service as conditions change. Although small hospitals cannot furnish all the services available in large institutions, they do fill an important need by making it possible for rural communities to attract and keep physicians. Many doctors now practicing in Kansas would not have located here and would not remain if small communities did not provide hospital facilities.

It is true that tax money may be necessary to support some hospitals, but this is not a serious problem since other public services such as schools receive tax aid.

The committee believes that the hospitals of Kansas are rendering a fine service that in general is pleasing to the people of this state.

Respectfully submitted,

J. H. A. Peck, M.D., *Chairman*

INDUSTRIAL MEDICINE

M. A. Walker, Kansas City, Chr.; J. W. Cavanaugh, Topeka; J. A. Grove, Newton; C. W. Hall, Hutchinson; H. R. Hodson, Wichita; P. C. Nohe, Kansas City; H. L. Regier, Kansas City; R. W. Urie, Parsons.

To the House of Delegates:

During this year the Committee on Industrial Medicine reviewed the fee schedule of the Workmen's Compensation Commission and made recommendations to the commissioner for certain changes for his approval. A new fee schedule pamphlet should be available from the commissioner soon.

A postgraduate course entitled "Industrial and Occupational Medicine in Town and Country" was given at the University of Kansas Medical Center, of which The Kansas Medical Society was one of several sponsors.

Respectfully submitted,

Maurice A. Walker, M.D., *Chairman*

MATERNAL WELFARE

D. E. Gray, Topeka, Chr.; D. A. Anderson, Salina; R. M. Carr, Junction City; L. E. Filkin, Concordia; H. M. Floersch, Kansas City; H. M. Foster, Hays; R. G. Heasty, Manhattan; R. L. Hermes, Lawrence; G. M. Martin, Topeka; R. L. Newman, Kansas City;

C. D. Shrader, Newton; F. L. Smith, Jr., Colby; R. A. West, Wichita.

To the House of Delegates:

Your Committee on Maternal Welfare held three meetings during the past year. The final form of the expanded questionnaire of maternal death investigations was approved and put into effect. Discussion of these cases of maternal death was held and responsibility assigned.

The committee also met with representatives of Blue Cross-Blue Shield for purposes of advising on maternity benefits and the gynecologic surgery fee schedule.

The committee has continued to act in an advisory capacity to the Kansas State Obstetrical Society.

Respectfully submitted,

David E. Gray, M.D., *Chairman*

MEDICAL ASSISTANTS

L. G. Allen, Kansas City, Chr.; R. A. Crawford, Hutchinson; H. J. Davis, Topeka; A. E. Hiebert, Wichita; G. R. Peters, Kansas City; J. M. Porter, Concordia; Walter Stephenson, Norton.

To the House of Delegates:

Several members of your Committee on Medical Assistants have met with the Executive Committee of the Kansas Medical Assistants' Society in a co-operative effort to make the assistants' society more effective. The co-operation of the other members of the committee and the executive secretary has been excellent.

It is the feeling of the committee that the medical assistants' organization is a very worthwhile one, and we wish to urge the doctors of Kansas to support the efforts of their individual employees in attending meetings of and working with the organization.

Respectfully submitted,

Lewis G. Allen, M.D., *Chairman*

MEDICAL ECONOMICS

L. S. Nelson, Jr., Salina, Chr.; J. N. Blank, Hutchinson; R. L. Gench, Fort Scott; E. J. Grosdidier, Kansas City; D. H. Macrae, Topeka; G. E. Milbank, Wichita; M. B. Miller, Topeka; F. A. Moorhead, Neodesha; B. A. Nelson, Manhattan; R. Sohlberg, Jr., McPherson.

To the House of Delegates:

The Committee on Medical Economics has met twice during the year and plans another meeting before the annual session. It has dealt mainly with problems of insurance.

A group life insurance plan for Kansas Medical Society members has been under consideration and intensive study for the past three years. The commit-

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tee is hoping that this year a plan may be decided upon which will give the membership the benefit of a low group rate, will give each member an increase in his life insurance plan, and will be available to all members including those who are uninsurable because of some physical disability. There are several plans under consideration, and it is hoped that one of these will be acceptable when the committee holds its next meeting.

The committee has had lengthy discussions about health and accident insurance for members of The Kansas Medical Society. Approximately one year ago the Washington National Insurance Company was approved by the committee and its plan was sold to a high percentage of the membership, including a good many who were uninsurable through usual plans of insurance. As far as the committee knows, this plan has been quite acceptable. It has paid a good many claims and has done so in a very co-operative manner. The company is to reopen its plan this year for availability to Kansas Medical Society members. Benefits have been increased, and it has been changed in a few other respects. The committee has felt that it has been a good policy. If there are any complaints throughout the state about the Washington National or any society-approved insurance plans, the Committee on Medical Economics would like to hear about them.

The committee has under consideration a plan of office expense insurance in case of accident or illness of the insured. This plan insures office expenses so that in the event of accident or illness the insured is able to keep his office open, pay wages of his employees, and keep up the rent without a drain on his personal income. The premiums on this policy are said to be deductible from income tax. This plan may be worth consideration.

In the matter of uniform insurance blanks, it is felt by the committee that simple, uncomplicated, uniform blanks to report a patient's illness or accident are definitely needed. At the last committee meeting it was reported that a nationwide form was to be adopted at the interim meeting of the American Medical Association. There has been no committee meeting since the A.M.A. session. This will be discussed at the next meeting. If such a blank was approved by the A.M.A., your committee will see to its adoption.

Respectfully submitted,

L. S. NELSON, JR., M.D., *Chairman*

MEDICAL SCHOOLS

J. B. Fisher, Wichita, Chr.; R. G. Ball, Manhattan; C. M. Barnes, Seneca; R. M. Carr, Junction City; R. D. Dickson, Topeka; A. C. Hatcher, Well-

ington; G. R. Peters, Kansas City; R. C. Polson, Great Bend; R. E. White, Garnett; G. G. Whitley, Douglass; H. H. Jones, Jr., Winfield.

To the House of Delegates:

This committee will have a complete report to give the House of Delegates on May 3. A meeting of the committee will be held at the University of Kansas School of Medicine on Sunday, April 17, which will be too late to permit findings of that meeting to be recorded in the JOURNAL. The meeting was purposely scheduled for late in the year to enable all members to submit all questions they might have concerning the school. The report will be submitted to the House of Delegates in mimeographed form.

Respectfully submitted,

J. B. FISHER, M.D., *Chairman*

MENTAL HEALTH

A. J. Adams, Wichita, Chr.; H. V. Bair, Parsons; R. L. Drake, Wichita; D. B. Foster, Topeka; T. L. Foster, Halstead; Mary Glassen, Phillipsburg; E. D. Greenwood, Topeka; L. W. Hatton, Salina; C. C. Hawke, Winfield; George Jackson, Topeka; C. J. Kurth, Wichita; W. F. Roth, Jr., Kansas City; D. R. Wall, Wichita; M. E. Wright, Lawrence.

To the House of Delegates:

The Committee on Mental Health held eight meetings in 1954. The following subcommittee chairmen were appointed on September 19, 1954: Dr. H. V. Bair, Epilepsy; Dr. R. L. Drake, Mental Hygiene Clinics; Dr. D. B. Foster, Legislation; Dr. T. L. Foster, Public Relations; Dr. Mary Glassen, County Medical Society Mental Health Designates; Dr. E. D. Greenwood, Children and Youth; Dr. George Jackson, Institutions; Dr. C. J. Kurth, Blue Cross; Dr. W. F. Roth, Jr., Nursing Homes; Dr. D. R. Wall, Mental Hygiene Society; Dr. M. E. Wright, Relations between Psychiatry and Psychology; Mr. L. W. Andrews, Topeka, Alcoholism.

Although each subcommittee chairman has been active, Dr. Mary Glassen has had work of special interest. In addition to her practice and her work as chairman of the Kansas Council for Children and Youth, she has found time to prepare an appealing list of programs for county societies, for county auxiliaries and others who wished help in securing programs on mental health subjects. She has also made arrangements for speakers and proposed source material.

The Committee on Mental Health has made special study of such topics as the juvenile code, commitment laws, laws pertaining to exceptional children, and establishment of mental hygiene and guidance

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clinics. This has resulted in the following recommendations and resolutions directed to the Council of The Kansas Medical Society.

1. The Committee on Mental Health recommends to the Council of The Kansas Medical Society that it approve passage by the legislature of the bill entitled "An Act Relating to Mentally Ill Persons and Providing for the Commitment, Admission, Detention, Care and Treatment of Mentally Ill Persons and Persons in Need of Psychiatric Treatment." The committee also recommends that the Society actively support its passage during the 1955 session of the Kansas legislature.

2. The committee recommends that the Council of The Kansas Medical Society support the program of supplying, through training and recruitment, an increasing number of qualified persons in our mental institutions and that sufficient funds be made available by the Kansas legislature for this purpose.

3. The committee recommends that the state of Kansas sponsor a continuing program of study and planning for the mental and physical health and welfare of Kansas citizens over the age of 60. The chairman asked that this recommendation also be called to the attention of the Council of The Kansas Medical Society.

4. The committee recommends that the Council of The Kansas Medical Society support the recommendations of the Kansas Council for Children and Youth and the Kansas Probate Judges' Association for codification and improvement of the juvenile statutes ("Juvenile Code," statutes directly affecting the health and welfare of children) presented to the 1955 session of the Kansas legislature.

5. The committee unanimously commends the Kansas Council for Children and Youth for its fine work in health and welfare of children.

6. The committee passed the following resolution:
WHEREAS, there is a great need for community mental health facilities, and

WHEREAS, there is also need for preliminary experience with this type of plan on a trial basis before any extensive commitment is made, and

WHEREAS, approval of the proposal is compatible with the support this committee gives the Kansas State Board of Social Welfare for its plan of developing out-patient services (already available or soon to become available) to the indigent and those of limited income, and

WHEREAS, the committee supports the efforts of other groups whose intent is to improve mental health facilities, therefore be it

Resolved that the Committee on Mental Health endorse for the approval of The Kansas Medical Society the objective of the proposal, to provide more community mental health facilities.

7. The committee passed the following resolution:
WHEREAS, the problem of alcoholism in the state

of Kansas constitutes a recognized major health, economic and sociologic hazard, and

WHEREAS, the legislature has seen fit to appropriate funds for the study of alcoholism within the state, and

WHEREAS, the medical profession has a large share in the responsibility for the general welfare of the state, therefore be it

Resolved that The Kansas Medical Society use its energies toward advising the legislature to appropriate funds to establish and staff centers for the treatment of alcoholics, utilizing if possible existing facilities, such as the University of Kansas School of Medicine where many of the requirements are currently available, and be it further

Resolved that such legislative grant should provide for continuing research fellowships in medicine and allied fields such as psychology, which programs are to be operated within these facilities, and be it further

Resolved that The Kansas Medical Society advance the care of alcoholics by education of its members in the best procedures available through pamphlets, lectures, seminars, reprints, and by the publication of pertinent articles in the JOURNAL of The Kansas Medical Society.

It is anticipated that the committee, in co-operation with the Kansas Psychiatric Society, will present an exhibit at the Society's annual meeting in Hutchinson relative to its activities and mental health subjects. It is also anticipated that the committee will further study the program for exceptional children of the Special Education Division of the State Department of Education.

The committee has been interested in a study of the sources of juvenile delinquency conducted by a special commission.

The committee is also interested in establishing and collecting a library of books and source material for the use of future committees on mental health.

Respectfully submitted,

Austin J. Adams, M.D., *Chairman*

NECROLOGY

J. F. Gsell, Wichita, Chr.; L. J. Brethour, Junction City; A. C. Gulick, Goodland; F. D. Lose, Madison; Alfred O'Donnell, Ellsworth; A. E. Titus, Cottonwood Falls.

To the House of Delegates:

The Committee on Necrology submits the following list of members of The Kansas Medical Society whose deaths have been reported since the last meeting of the House of Delegates:

Name and Address	Date
	Age 1954
Dr. Mowry Stafford Thacher, Turon	84 Apr. 1
Dr. Edward D. Kilbourn, Wichita	73 Apr. 17
Dr. Orlan Dayton Sharpe, Neodesha	85 May 1

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Bumbalo, T. S.; Gustina, F. J.,
and Oleksiak, R. E.:
J. Pediat. 44:386, 1954.

White, R. H. R., and
Standen, O. D.:
Brit. M. J. 2:755, 1953.

against ROUNDWORMS

"Ninety per cent of the children passed all of their ascarides..."

Brown, H. W.:
J. Pediat. 45:419, 1954.

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Dr. Richard G. Meisburger, Kansas City	44 May 26
Dr. Clarence E. Boudreau, El Dorado	76 June 14
Dr. David Thompson Nicoll, Topeka	90 July 12
Dr. Oliver David Walker, Salina	93 Oct. 6
Dr. James Carey Robb, Fowler	75 Oct. 6
Dr. Benjamin Smith Morris, Quinter	54 Oct. 24
Dr. Joseph Fowler, Osawatomie	72 Oct. 25
Dr. George Wightman Kirby, Wichita	73 Oct. 27
Dr. Arthur Edgar Bence, Wichita	65 Nov. 19
Dr. Z. Hosea Snyder, Greenleaf	84 Dec. 9
Dr. Herbert Melville Webb, Humboldt	77 Dec. 16
Dr. Irl Edwin Hempstid, Hutchinson	63 Dec. 19
Dr. Richard Clark Lowman, Kansas City	87 Dec. 20

1955

Dr. Pearl R. Young, Ottawa	78 Jan. 24
Dr. William Herbert Walker, Kansas City	80 Feb. 9
Dr. Edgar Ernest Brooks, Burden	71 Feb. 21
Dr. Floyd Ernest Richmond, Stockton	82 Feb. 22
Dr. William Ernest Michener, Topeka	73 Feb. 24
Dr. Oliver Smith Rich, Wichita	73 Mar. 1
Dr. Fred Clayton Albright, Garland	76 Mar. 15

Respectfully submitted,

J. F. Gsell, M.D., *Chairman*

NOMINATIONS

C. H. Benage, Pittsburg, Chr.; W. F. Bernstorff, Winfield; O. W. Davidson, Kansas City; J. H. A. Peck, St. Francis; H. N. Tihen, Wichita.

To the House of Delegates:

A meeting of the Nominating Committee of The Kansas Medical Society was held at the Jayhawk Hotel, Topeka, on January 9, 1955, and the following names were proposed for the various offices to be filled by vote of the House of Delegates at the annual session in May:

FOR PRESIDENT-ELECT

Dr. Clyde W. Miller, Wichita

FOR FIRST VICE-PRESIDENT

Dr. Conrad M. Barnes, Seneca

FOR SECOND VICE-PRESIDENT

Dr. Thomas P. Butcher, Emporia
Dr. Mahlon H. Delp, Kansas City
Dr. Dwight Lawson, Topeka
Dr. Barrett A. Nelson, Manhattan
Dr. Lloyd W. Reynolds, Hays

FOR CONSTITUTIONAL SECRETARY

Dr. James A. Butin, Chanute

FOR TREASURER

Dr. John L. Lattimore, Topeka

FOR A.M.A. DELEGATE, 1956-1957

Dr. George F. Gsell, Wichita

FOR A.M.A. ALTERNATE, 1956-1957

Dr. John C. Mitchell, Salina
Dr. Glenn R. Peters, Kansas City
Dr. Frederick E. Wrightman, Sabetha

The list of nominees is presented now in accordance with provisions of the Constitution and By-Laws. Additional nominations, of course, may be made from the floor at the time of the election.

Respectfully submitted,

C. H. Benage, M.D., *Chairman*

PATHOLOGY

J. L. Lattimore, Topeka, Chr.; T. R. Hamilton, Kansas City; C. A. Hellwig, Halstead; N. P. Sherwood, Lawrence; B. E. Stofer, Wichita.

To the House of Delegates:

The Committee on Pathology has held two meetings during the past year and has considered two matters.

One was a resolution requesting the Kansas State Board of Health to subsidize autopsies by payment of a fee. It was the opinion of the committee that such a project would not increase autopsies, and the resolution was not approved by the committee.

The second meeting concerned a report from the Special Committee to the Kansas State Board of Health, dealing with certain principles as to the scope of the Board of Health Laboratory. The meeting was held in conjunction with the Special Committee, and an agreeable recommendation was made, approved by both the Committee on Pathology and the Special Committee to the Kansas State Board of Health.

Respectfully submitted,

J. L. Lattimore, M.D., *Chairman*

POSTGRADUATE STUDY

E. L. Mills, Wichita, Chr.; W. H. Algie, Kansas City; M. H. Delp, Kansas City; H. L. Hiebert, Topeka; H. H. Jones, Winfield; H. P. Palmer, Scott City; Maurice Snyder, Salina.

To the House of Delegates:

The Committee on Postgraduate Study, in conjunction with the Postgraduate Division of the University of Kansas School of Medicine and the Kansas State Board of Health, has been active in continued postgraduate courses at the University of Kansas Medical Center. These have covered many phases of medical practice, including those of medical technology.

The postgraduate circuit courses to various communities in the state have been widened and have

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Literature," an index to articles on neoplastic diseases from
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been well received. In addition, the correspondence course in electrocardiography has been continued.

The coverage of postgraduate medical education for physicians in the state has been so wide and active that two out of every three physicians in the state have had some type of postgraduate training through these activities. The University of Kansas Medical Center has become one of the most prominent centers for postgraduate training in the nation.

A questionnaire is being prepared and will be sent to physicians of the state in an effort to widen the scope and effectiveness of postgraduate medical training.

The fund for physicians returning from military service who wish to take extended postgraduate medical training is still active.

Much of the success of postgraduate medical education in this state is due to the effort of the University of Kansas Postgraduate Division and its most efficient staff.

Respectfully submitted,

E. L. Mills, M.D., *Chairman*

PUBLIC RELATIONS

E. S. Brinton, Chr., Wichita; J. F. Barr, Ottawa; H. S. Blake, Topeka; T. P. Butcher, Emporia; G. W. Cramer, Parsons; L. G. Heins, Abilene; J. D. Hilliard, Medicine Lodge; N. E. Hull, Hays; M. S. Lake, Salina; P. B. Leffler, Pittsburg; J. W. Manley, Kansas City; C. W. Miller, Wichita; V. R. Moorman, Hutchinson; R. H. O'Neil, Topeka; C. O. Stensaas, Arkansas City; V. E. Wilson, Kansas City.

To the House of Delegates:

Your committee has engaged in one considerable project as a follow-up to the survey previously made. A special manual on county medical public relations was prepared by the American Medical Association listing 10 principal projects that have been tried and proved successful. These projects are described in detail, showing how they could be instituted, how carried on, and what results might be anticipated.

A quantity of this material was obtained and a copy was sent to each county medical society in Kansas. Follow-up letters have attempted to encourage county medical societies to experiment with one or more of these ideas.

During the past few months, certain other activities of The Kansas Medical Society have taken the major portion of the time of the executive office, and this project has not continued according to schedule. It is recommended, however, that letters be prepared for regular mailing to each county medical society and that they further explore the project recommended in the hope that all societies will at least organize a grievance committee and establish

and publicize some form of 24-hour call service. Those two items would eliminate much of the present complaint against organized medicine. Other letters will then recommend further projects such as speakers' bureaus, press relations, a variety of public service projects, and citizens' participation programs.

Your committee wishes to record that numerous societies have performed outstanding public relations services during the past year. It had previously been the intention of your chairman to mention a number of these, but there have been more than could adequately be covered in the brief space of such a report. Your chairman feels encouraged over the sincere interest medicine is showing in this regard and hopes that this will continue to be more fruitful until every society cooperates in more than one phase of public relations.

Your committee again recommends that the House of Delegates authorize this committee to seriously explore the possibility of sustaining radio and television programs and during the coming year will be guided by whatever direction the House of Delegates cares to give.

Respectfully submitted,

E. S. BRINTON, M.D., *Chairman*

RURAL HEALTH

V. E. Brown, Sabetha, Chr.; J. R. Bradley, Greensburg; J. G. Claypool, Howard; C. S. Fleckenstein, Onaga; E. T. Gertson, Atwood; R. E. Grene, La Crosse; C. C. Gunter, Quinter; K. R. Hunter, Lebo; D. L. Marchbanks, Hill City; John Neuenschwander, Hoxie; R. H. O'Donnell, Ellsworth; J. W. Parker, Burlington; E. F. Steichen, Lenora; R. P. Stoffer, Halstead; G. A. Surface, Ellis; H. J. Williams, Osage City.

To the House of Delegates:

The Committee on Rural Health held two meetings during the year. In addition, the chairman attended the National Rural Health Conference which was held in Milwaukee in February. Dr. Conrad M. Barnes, Seneca, former chairman of the committee, presented two papers at the national meeting.

The committee has continued its study of the effects of carbon monoxide and tractor vibrations on the health of the farmer. Correspondence with various organizations interested in rural health and with manufacturers of farm equipment reveals that little research to date has been conclusive. The committee hopes to continue the study next year.

A joint meeting of this committee and the Committee on Medical Schools will be held before the annual session, and a supplementary report will probably be given at the meeting of the House of Delegates.

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The committee will seek approval of the governing body of The Kansas Medical Society to extend an invitation to the American Medical Association to hold the National Rural Health Conference in Kansas in 1958 or 1959.

Respectfully submitted,

V. E. BROWN, M.D., *Chairman*

STORMONT MEDICAL LIBRARY

J. D. Beck, Topeka, Chr.; G. F. Corrigan, Wichita; Rodger Moon, Prairie Village; A. K. Owen, Topeka; W. L. Valk, Kansas City.

To the House of Delegates:

No special requests for evaluation of books or periodicals have been received. The library continues to serve the state of Kansas, as in the past. Even though its principal value is to the legal profession, there are many doctors of medicine who also utilize its services.

One bill which would have an effect on Stormont Medical Library was introduced in the 1955 legislature, but was not enacted. The bill provided that the State Executive Council be empowered to find suitable quarters for the library. Since we feel no dissatisfaction with the library's present location in the state house, we are pleased that the bill failed of passage.

Respectfully submitted,

J. D. BECK, M.D., *Chairman*

STUDY OF HEART DISEASE

P. W. Morgan, Emporia, Chr.; D. R. Bedford, Topeka; P. M. Clark, Independence; E. G. Dimond, Kansas City; C. W. Erickson, Pittsburg; H. A. Flanders, Hays; L. H. Leger, Kansas City; G. L. Norris, Winfield; L. O. Peckenschneider, Halstead; D. C. Wakeman, Topeka.

To the House of Delegates:

Your Committee on Study of Heart Disease has held two meetings this year. The committee continues its position in favor of the one-day course in cardiology at the University of Kansas School of Medicine and recommends that the Kansas State Board of Health budget funds to make this program possible.

Because of conflicting dates the committee voted to cancel the four-day course in cardiology at Emporia in 1954. This program will be held in 1955, but a possible change in dates will be considered to prevent conflict with the meeting of the American Heart Association.

In an effort to begin a study on acute coronary attacks, a subcommittee was appointed to draft a sample survey sheet for distribution to members of the committee for study and recommendations.

Respectfully submitted,

P. W. MORGAN, M.D., *Chairman*

VENEREAL DISEASE

M. D. McComas, Jr., Concordia, Chr.; M. L. Bauman, Wichita; A. B. Harrison, Wichita; H. F. O'Donnell, Wichita; G. S. Voorhees, Leavenworth; V. M. Winkle, Topeka.

To the House of Delegates:

The Committee on Venereal Disease and the Kansas State Board of Health have prepared a booklet, "Notes Concerning Syphilis," which was distributed to all physicians in Kansas in March, 1955. This booklet lists certain schedules recommended in the treatment of syphilis and a chart of diagnostic criteria, and it points at the need for and results of rapid epidemiologic investigation of early syphilis.

Respectfully submitted,

M. D. McComas, Jr., M.D., *Chairman*

Kansas Blue Shield

To the House of Delegates:

The year 1954 proved to be highly successful for Kansas Blue Shield.

Membership was increased from 337,459 at the end of 1953 to 385,021 at the end of 1954. This represents a net gain of 47,562 members.

Every county of the Kansas plan was given a community enrollment during 1954. This was possible because of the new non-group program which was put into effect in January of that year. From all appearances, this new program is proving effective

and will no doubt improve with better understanding of its function.

Blue Shield now has a reserve of \$1,662,081.34 as compared to \$1,153,558.52 at the end of 1953. This increase to reserve for 1954 represents more than 11 per cent of membership dues income. The reserve is considered to be at a satisfactory level.

Operating expenses for the year amounted to 13.52 per cent of income. This includes all phases of operation such as enrollment of members, collecting of dues, processing cases for payment, and advertis-

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KARL J. WAGGENER, M.D.

ing. Total operating expenses in terms of dollars amounted to \$575,486.05.

Income from membership dues for the year was \$4,255,867.69. Of this amount 75.11 per cent or \$3,196,653.87 was paid to participating physicians for services rendered to Blue Shield members.

A plan for enrolling Farm Bureau members in Blue Shield was completed in 1954. This program establishes this association as a category of business which will be offered a special rate. The Farm Bureau group is to be self-sustaining, and rates and benefits are to be adjusted according to utilization of the group. Enrollment will be on a county group basis with groups being formed when the proper percentage can be obtained. It is thought that this special incentive will stimulate rural enrollment substantially during the coming year.

Preliminary studies and planning for a Blue Shield service contract with \$6,000 family income were started in 1954. When all pertinent data and recommendations have been completed, the Blue Shield board will act on this proposal. If approved, it will be presented to all participating physicians for acceptance.

Effective October 1, 1954, Blue Shield approved some additional benefits with no increase in membership dues. This was one more step in the direction of making the contract as comprehensive as possible. Studies are being made to determine costs of other types of benefits that the profession may wish to cover at a future date.

Nationally, Blue Shield continued to expand during the past year. With an enrollment of over 30 million members, the amount paid annually for case expense is approaching \$300,000,000. Competition in the group field continues to be tough. Blue Cross-Blue Shield is making every effort to improve its programs in group and non-group enrollment so that the plans will continue to hold leadership in the health insurance field.

The participating physician is the life blood of any Blue Shield plan. Quality of product, rate of growth, utilization of the contract, and delivering of services are all dependent on the understanding and interest of the profession.

Respectfully submitted,

L. W. Reynolds, M.D., *President*

Kansas State Advisory Committee

To the House of Delegates:

We are all aware of the functions of the Kansas State Advisory Committee and the Local Advisory Committees. The policies are principally the same, with one exception. Due to the almost complete depletion of available physicians in Priority I and Priority II, it was necessary to lower the age limit of those in Priority III from those born after August 30, 1922, to January 1, 1917. Additional pressure will be put on the committees to release those who have been deferred previously. This pressure is expected to increase during the next two years. All interns are subject to military service immediately after completing their internship. Practically no physicians in residencies are being deferred.

I believe some of the Local Advisory Committees do not appreciate the importance of an immediate answer to our question of availability. These requests come to us from the National Advisory Committee in Washington, D.C., and they require a prompt reply in order to enable that committee to properly classify the physician in question. If our recommendation does not reach them in time, they are forced to act without it. I am sure that undue public feeling has been aroused in various instances because of

delay on the part of the Local Advisory Committees in making known their recommendations.

From June, 1954, to March, 1955, there have been calls for 19 physicians from Kansas. All have received commissions in the various branches of the armed forces. Future calls have been slowed down until the outcome of the Doctor Draft is known. At this writing the act is being debated, and in the event it is not extended beyond July, 1955, all this will be changed.

Respectfully submitted,

B. J. Ashley, M.D., *Chairman*

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The 1955 goal of the American Medical Education Foundation is for contributions of two million dollars for the nation's medical schools. A direct mail campaign will be utilized to encourage generosity.

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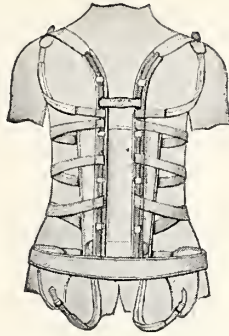
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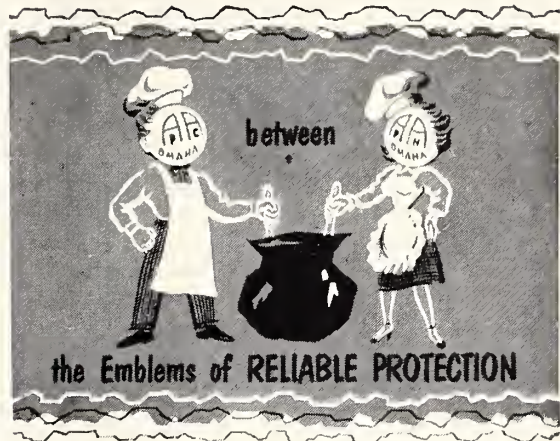
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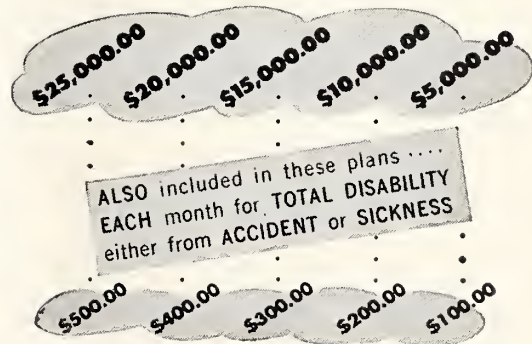
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BOOK REVIEWS

Normal Labor. By Leroy A. Calkins. Published by Charles C Thomas, Springfield, Illinois. 128 pages, 2 illustrations, 40 charts and graphs. Price \$4.00.

This book is a summary of the author's 25 years of experience and study of normal labor and its management. Definition of onset of labor is briefly discussed with a description of important factors involved in success or failure, including the frequently overlooked "firm" cervix.

The last half of the book consists of selected reprints of important contributions made by the author in the past 25 years to medical literature dealing with various aspects of labor and its management.

The book should be valuable to anyone interested in obstetrics.—R L.N.

The Kidney. Ciba Foundation Symposium. Edited by A. A. G. Lewis and G. E. W. Wolstenholme. Published by Little, Brown and Company, Boston. 333 pages, numerous illustrations and charts. Price \$6.75.

The previous Ciba symposia have been excellent and this new symposium on the kidney, held and recorded in July 1953, upholds the high standard of the former publications.

All of the papers bring to us in a compact form the latest information on the physiology and pathology of the kidney. Each has stimulated a good deal of discussion, and the comments of the discussors are often more valuable than the paper itself. The contributions by the American physiologists, Doctors Jean Oliver, J. P. Merrill, R. F. Pitts, and J. V. Taggart, are outstanding, and the obviously good international spirit of all the participants is evident in their discussions.

This volume is recommended to all who have more than a casual interest in the physiology of the kidney.—W.L.V.

Smoking and Cancer. A Doctor's Report. By Alton Ochsner. Published by Julian Messner, Inc., New York City. 86 pages, 16 graphs. Price \$2.00.

In this little volume Dr. Ochsner presents a philippic against smoking. His reputation as an eminent surgeon gives added weight to his opinions on the cause-and-effect relationship between cancer and smoking. Certainly the evidence he presents is well substantiated by medical research (the Hammond-Horn report and the Doll-Hill report particularly). A number of the graphs are poorly done and rather confusing. No intelligent person could read this book without suffering serious doubts as to the advisability of using tobacco in any form.—C.B.

Reactions With Drug Therapy. By Harry L. Alexander. Published by W. B. Saunders Company, Philadelphia. 282 pages, 32 illustrations. Price \$7.50.

New drugs have been added to the armamentarium of the physician so rapidly in recent years that one has extreme difficulty in becoming acquainted with the therapeutic potentialities of the more important ones, let alone their toxic possibilities. The present volume discusses this aspect of drugs. It is not a treatise on toxicology in the usual sense of the word, but rather a discussion of reactions which may be loosely described as allergic in nature and which are induced by a rather large number of modern therapeutic agents.

The introductory chapters are concerned with general principles and mechanisms of drug sensitivity. Considerable space is given to discussing the various body systems which are most commonly affected and their usual patterns of reaction.

The bulk of the book is devoted to specific therapeutic agents, and the coverage is quite good. Treatment of various reactions is briefly outlined. Illustrations are adequate. Extensive bibliographies enhance each chapter.

Practicing physicians will find that this book offers much information that is not found in the usual handbook of toxicology and will undoubtedly profit by having it in their libraries.—J.D.R.

Annual meeting, Kansas Medical Society, May 1-5, 1955, Hutchinson.

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Adapted from Altmeier, W. A.; Culbertson, W. R.; Sherman, R.; Cole, W.; Elstun, W., & Fultz, C. T.: *J.A.M.A.* 157:305 (Jan. 22) 1955.



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Volume LVI

MAY, 1955

No. 5

The Present Concept of Industrial and Occupational Medicine

C. F. Shook, M.D.

Toledo, Ohio

"Although occupational medicine has been designated in recent years as a specialty, it is by no means a restricted one. If properly practiced, it approaches a return to the intimate concern of a physician for his patient, so nobly exemplified by the old family doctor. In this respect, occupational medicine stands in sharp contrast to the limited specialties in medicine. Occupational medicine is not interested in the patient's eyes alone, or his allergies, or his heart. It is interested in man and all that aids or hinders his welfare."—From *Occupational Medicine and Industrial Hygiene* by Dr. Rutherford J. Johnstone.

Later Dr. Johnstone added to this expression when he said, "Occupational medicine is that phase of practice which is concerned with the working and the living habits of the worker as well as with the physical conditions under which he works and lives."

Personally, I doubt that any definition of industrial medicine that would be generally accepted has ever been proposed. The Council on Industrial Health of the American Medical Association defines occupational medicine as "that field of practice which concerns itself with health problems that are caused by, aggravated by or improved by factors of occupation. Industrial medicine is a service of occupational medicine provided to employed groups by an employer, or a third party with a valid interest. . . . This purpose is served by

"1. Prevention of disease and injury through medical supervision of workers, the work place, materials and processes.

"2. Constructive health measures such as medical examinations, counseling and health education.

"3. Medical and surgical care to restore health and productive capacity as promptly as possible following occupational illness or injury."

The old concept that industrial medicine consists solely of treatment of occupational injuries and illnesses is now obsolete. We are in the age of preventive medicine, and the treatment of occupational injuries and illnesses constitutes only a small portion of the responsibilities of a good industrial medical service. (You will please note that we in Owens-Illinois call our professional section Medical Service for we feel that this is a warm and welcoming term rather than the cold, businesslike name of Medical Department or the like.) Management is more and more beginning to realize that production comes from people and that a healthy, contented worker is not only a happy worker but a better producer.

Industrial medicine is not new—a fact I learned from an elderly doctor who had been physician for the Wanamaker stores in Philadelphia for some 40 odd years. Industrial medicine first came into prominence, however, with the enactment of the Workmen's Compensation Law just prior to World War I. At that time, industry awakened to the cost of accidents and began looking for ways and means to keep them at a minimum. Accidents are expensive, and

Presented as part of a postgraduate course for general practitioners at the University of Kansas Medical Center, December 6, 1954. Dr. Shook is medical director of Owens-Illinois, Toledo, Ohio.

these costs, when added to the product cost in a competitive market, often mean the difference between success and failure.

World War I, with its demand for manpower and industry's utilization of women replacements, developed the value of a good medical program even further. There was a slight lull which followed the depression, but on the whole industrial medicine has grown as rapidly as the proverbial weed. Unfortunately, there still exist segments of industry that have not appreciated the relationship of health and safety to production, chiefly because of the apparent cost. They have failed to give due credit to preventive medicine. They have forgotten that old adage, "An ounce of prevention is worth a pound of cure." They have failed to examine their own problems and compare them with the accomplishments of others. They will have to learn the hard way.

Some time ago the professors of preventive medicine of the leading medical schools of the country sat as a study group to determine the best definition of preventive medicine. For days they tossed the subject around and came up with the following definition. "Preventive medicine is a matter of attitude." This surely is a surprising summation, but let us think about it a minute and show its relationship to modern thinking on occupational health. Every doctor, whether he be general practitioner or specialist, spends an increasing percentage of his time on health education, prevention of illness, and rehabilitation. Occupational health deals with these three also.

Industrial health is concerned with the well-being of men at work, and this is how industrial medicine fits into the production picture. It is a fact that every industrial plant, large or small, employs a man or a crew of men whose job it is to lubricate, repair, and tune up the plant machines so that they may be kept at the peak of productive capacity. Everyone will admit that that is good, sound business. It is just as good business for the employer to provide for the adjustment, repair, and "lubrication" of the human machines upon which the operation of the steel machines depends. Good health, wholesome working conditions, and protection against hazardous processes are essential if we are to attain satisfaction in our medical program.

Why do we have a medical service in plants? Is it merely to comply with state and federal laws and the Workmen's Compensation Act? Is it merely to render first aid to the injured? I hope not, yet I fear this attitude is true in many plants. More should be done than rendering first aid and following up on industrial accidents if one is to get full benefit from the professional people assigned to that service. In the plant physician and the industrial nurse there is available a wealth of experience and professional

knowledge which should be utilized to the utmost. The unfortunate victim of an industrial accident or disease should receive more than care in an emergency. His health must be protected through all types of hazards, and he should be educated in health, safety, hygiene, and sanitation.

Management is responsible for the health and safety of its employees, and there is no better means of developing good industrial relations between management and the worker than through establishment of a complete, understanding medical service. The personnel of this service should be properly recognized by management, and due consideration should be given to all their recommendations.

At the last annual meeting of the Council on Industrial Health of the A.M.A., a portion of the program was reserved for a new type of material. The section was entitled "Success Stories for 1953." It was my good fortune to be permitted to describe the educational program covering industrial health as sponsored by the American Academy of General Practice, the Industrial Medical Association, and the council. As a matter of fact, the entire program was initiated by the late Dr. Merrill Shaw and his Committee on Education of the American Academy of General Practice.

Why should the general practitioner be interested in industrial medicine? First of all, according to Charles E. Nyberg's article in *GP*, over 90 per cent of all family physicians devote part of their time to industrial cases. This may sound a bit out of line, but I assure you it is not. The figure is closer to 100 per cent of all physicians actively engaged in the practice of medicine and surgery. Even specialists in diseases peculiar to women and children, in their daily contact with members of workers' families, or the workers themselves, do affect production through the morale of the worker.

We can readily show that an employee who has worries at home is neither a safe worker nor a 100 per cent producer. His mind is not on his work but back home or in the hospital with his wife or child. An assurance that all is going well will mean much to this worker if the doctor will take time to give it to him.

We know that the majority of our patients work in some industry. We also know that most of these workers connected with smaller industrial plants do not have the benefit of a good industrial health program. Whatever help these individuals get must come from the family physician. He is the only professional person who can promote preventive medicine or pay attention to industrial hazards and emotional tensions that might be connected with the job.

Many physicians, at some time or another, are called upon to attend a worker for illnesses that are not considered occupational in character. These ill-

nesses often result in absenteeism which has a decided effect on production and the local economy. By that we mean that an absent employee is an economic loss to industry and to himself.

Good health is good business.

Industries which have some form of individual health care have discovered that it does help solve many obvious plant health problems: control of communicable disease among workers, reduction of industrial disease, accident prevention, treatment of minor physical defects, attention to better nutrition and plant sanitation, and proper placement of workers at their jobs. Even so, 90 per cent of industrial absenteeism is caused by sickness or injury which has nothing to do with the worker's employment. Unnecessary absenteeism is costing millions every year, and the understanding physician can do much to lower this figure.

One thing, at any rate, is clear: better health means better workers. Healthy workers have fewer accidents, are less susceptible to infection, do a better job, and have a better will to work. Furthermore, it adds up in dollars and cents to the employer too. Fewer days lost because of industrial accidents or disease mean lower compensation costs. Machines get less wear and tear when there are fewer substitute operators. Reduced absenteeism cuts down disruption of the continuous processes in modern factories.

The welfare of the community is dependent upon the success of local industry.

The general practitioner, or the personal physician, has recognized his responsibilities and his influence in this new field. He wants to improve himself and do the best job possible. He has expressed a desire through his organization for further enlightenment in industrial medicine. He already knows how to care for the sick and injured. What he wants is additional advice on occupational hazards, industrial hygiene and sanitation, preventive medicine, safety, and similar projects aimed at improving the health and well-being of the worker.

Often when we talk to the general practitioner we neglect to cover his essential part in our industrial program. Consequently, he fails to understand the economic picture of absenteeism and the need for having an employee on the job as part of a team.

Sickness and injury, whether occurring on the job or not, are costly. The cost may be compiled directly and estimated indirectly. In a recent survey it was shown that the cost of absenteeism was \$56.02 per employee per year. (Please note that the cost is per employee on the payroll and not per absentee.) Absentee cost figures ran as high as \$107 per employee per year in one company. Indirect costs are those which occur when a replacement must do the work of the absent employee. Seldom can a substitute turn

out as much work, and work of as high quality, as the regular employee.

This problem of absenteeism is a serious one, and it has been growing steadily over the past years. It is not wholly a personnel problem nor one of industrial relations. It is a community problem, and it can be solved only through the teamwork of many, including the family doctor.

What can we do about it? Industry is in business to make the most salable product at the lowest possible cost. It must watch costs if it is to stand in a competitive market and at the same time pay good salaries, pay adequate dividends to stockholders, and set aside a bit for future development.

First of all, we can help in the practice of preventive medicine by advocating better health and safety for all. The care of the injured is not enough.

Second, we can endeavor to return the wage earner to work as soon as it can be done safely. Industry doesn't want him returned unless he is capable of working without danger to himself or his fellow man. When a physician signs an absentee slip, he is asserting that his patient is 100 per cent disabled for work, and you and I know that this form of certification is abused daily.

The average employee wants to work, but sometimes it doesn't take much encouragement for him to stay at home. Psychology is a great science which should be practiced right here. There is a sound reason for keeping a man on the job if possible. Once the employee gets home, it is hard to get him back, especially if he can draw compensation.

One loophole today is the easily secured doctor's signature for just another week or two. The house needs painting, the hunting season is open, or a bit longer vacation is desired. If the physician would only see the patient personally and then judge his capabilities, he would be just to all concerned.

Another economical move would be better observation of so-called industrial illness and dermatoses. It is so easy to fall in line with the patient's suggestion that he works with lead, arsenic, volatile chemicals, or in the various dusts.

May I give you an example? A doctor recently signed an accident claim with the diagnosis of "radiation sickness." The attending physician had let his scant knowledge of his patient's line of work influence his diagnosis. Had he checked closer he would have found that the man was employed in making glass television bulbs which were furnished to a distant assembly plant for the insertion of electronic parts which make it a television tube. There wasn't any radiation material within miles of the employee. The true diagnosis is not known, but it was a condition not considered occupational. The doctor's face became red, the patient lost some respect for his doctor, and all concerned went to unnecessary

expense. This is not an exceptional case. It happens daily in many other types of fabrication.

In a recent discussion Dr. Melvin N. Newquist, medical director of the Texas Company, summarized the proper scope of medical care in industry in the following manner. First, he stressed the relationship between the industrial physician and the general practitioner. He said, "Employee health cannot be segmented; it is indivisible. Employers and employees are interested in total employee health and health around the clock." He went on to say, "An adequate industrial health service cannot exist by itself inside the plant walls. It must be woven into the fabric of over-all health service for the community. That means reliance on specialists and particularly general practitioners to round out the health picture, with the plant physician serving also as a health service coordinator."

In summary, may I say that we, as physicians, are interested in more than the care of the sick and

injured. We are interested in the general welfare of the patient and its effect on his family and the community. We should be just as interested in knowing that our patient works in safe, healthful surroundings as we are in knowing that he eats and sleeps in a safe and healthful atmosphere.

Industrial health is concerned with the well-being of men at work, at home, and at play. It cannot be limited in its scope if we are to improve our standards as a producing nation.

We as general practitioners have that solicitude. Industry, although it responds slowly, is showing increasing concern for the health and welfare of its employees. Our help is greatly needed.

A good industrial health program holds infinite prospects for good. It is a field of promise for all concerned—labor, management, and the profession. It is rich in possibilities, provided all are interested and willing to work as a team toward the goal of health and safety for all.

Succinylcholine Chloride (Anectine®) in the Treatment of Tetanus: Case Report

Maurice M. Tinterow, M.D.

Wichita, Kansas

Sedation has been the keystone in the treatment of tetanus. Convulsions and spasticity must be controlled to avoid the complications more frequently encountered such as atelectasis and pneumonia as a result of aspiration of secretions from the upper respiratory tract during convulsions, complete exhaustion of the patient following repeated convulsions and spasticity, and death from acute asphyxial spasms during severe tonic convulsions.

Treatment in the past has been on the basis of sedation. However, even with the use of heavy sedation, failure to control convulsions has led to death. The selection of sedatives in the treatment of tetanus is a matter of individual preference. The ideal depressant drug still remains to be discovered. How-

ever, with intense investigations into the use of muscle relaxants in anesthesia, the possibility of the introduction of these drugs into the treatment of tetanus seemed assured.

A short history of the use of muscle relaxants in the treatment of tetanus reveals its actual use since the purification and synthesis of muscle relaxant drugs. Cullen (1943)¹ and Godman and Adriani (1949)² have used curare. Boles and Smith (1951),³ Armstrong (1951),⁴ and others have stressed the use of mephenesin with some success in less severe cases of tetanus. However, as has been stated by others, the unpredictability of these drugs in their action on respiration has not prompted too vigorous investigations along these lines, and the lack of material likewise has hindered use of the drugs in a large series of cases.

With the introduction of succinylcholine chloride as an ultra short-acting muscle relaxant for use in anesthesia, its availability as an adjunct in the treat-

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The succinylcholine employed in this study was "anectine" chloride brand succinylcholine chloride, a product of Burroughs Wellcome & Co. U.S.A., Inc., Tuckahoe, New York.

ment of tetanus has been made by others. Woolmer and Cates (1952)⁵ reported the first successful use of succinylcholine in the treatment of tetanus. Since then cases have been reported by Forrester (1953)⁶ and by Hamilton, Tovell, and Barbour (1953).⁷

The following case is one in which recovery from tetanus was successful. Use of the drug was instituted and dosage determined without any pre-existing knowledge of the use of the drug in this disease. Facilities for constant care were present, and it was felt that relaxation could not be accomplished with the use of heavy sedation since the disease had been present for six days prior to diagnosis. The ease of administration of succinylcholine, the rapidity of return to normal when respiratory paralysis occurs due to overdosage of the drug, and the degree of muscle relaxation which can be accomplished with the drug, make succinylcholine the drug of choice in the treatment of tetanus.

CASE REPORT

This 25-year-old white female was admitted to Wesley Hospital, Wichita, with a complaint that she was unable to open her mouth when she started to eat breakfast the morning of June 30, 1953. She stated that on June 22 she had had an abortion, type unknown, and was in bed at home until all of the bleeding and vaginal discharge had stopped. She consulted a chiropractor on June 30 when she was unable to open her mouth because of tightness of her jaws. He manipulated her neck, back, etc., following which she complained of a stiff back and neck and a drawing sensation in the muscles of her neck. She denied any injuries, lacerations, or open sores.

The patient stated that she was nervous and had arguments with her husband, who laughed them off. She grasped her head and moaned with pain while questioned about arguments with her husband. A diagnosis of hysteria was made with a differential diagnosis mentioning tetanus, but this was not considered likely at this time. She was given sodium amytal intramuscularly but was not co-operative.

Upon admission physical examination revealed a well nourished female in acute distress. Her temperature was 97.6 degrees F., pulse rate was 92 per minute, and respirations were 18 per minute. Speech was accomplished with her teeth closed, and she was unable to open her mouth wide enough to admit a small coin on its flat surface. There was spasm of the masseters and posterior neck muscles. Nuchal rigidity was present, as was hyperexcitability. There was unrestrained ankle clonus. Laboratory tests were normal and not significant.

On the morning of July 6 she fell out of bed and received a laceration of her head. Further examina-

tion revealed stiffness of neck muscles and trismus of the jaw. Spinal fluid examination was not significant, and a diagnosis of tetanus was then made. Anti-tetanic serum was administered by intravenous and intramuscular routes. Sedation in the form of sodium amytal was also given. She complained of severe pain in her neck, back, and legs. At 1:00 p.m., July 6, an intravenous infusion of 0.3 mgm. per ml. of succinylcholine chloride in 5 per cent glucose in water was started. The rate was set to deliver 0.2 to 0.3 mgm. per minute or a rate of between 15 to 20 drops per minute. Within the next hour the patient was noted to relax; however, in the following two hours, the muscle spasm became more severe, and the rate of succinylcholine was increased to 25 to 30 drops per minute. About 9:30 p.m. because of her inability to remove secretions from the pharynx, and since a catheter inserted into the nose in order to remove secretions from the posterior pharynx would increase muscle spasm because of her hyperexcitability, a tracheotomy was performed under nitrous oxide-oxygen anesthesia. Aspiration of the accumulated secretions was then accomplished with ease. Her respirations became quiet, and no cyanosis was noted. A total of 1600 mgm. of succinylcholine was administered on July 6, 1953.

On July 7, following tracheotomy, there seemed to be less resistance on the part of the patient to her nursing care. However, by 7:45 a.m., muscle spasm of the back muscles had returned, and the succinylcholine was again increased. By 11:45 a.m., she was again relaxed, and by 1:10 p.m., since the succinylcholine had not been reduced, her respirations became shallow and her nail beds were cyanotic. The intravenous drip was slowed to 10 drops per minute, and in three to four minutes her respirations returned to normal and all cyanosis had left. The total amount of succinylcholine for this 24-hour period was 1600 mgm.

By July 8, the patient's condition showed steady improvement. Hyperexcitability was absent. She could open her mouth and admit a finger between her teeth without eliciting pain. Aspiration of the tracheo-bronchial tree was necessary only once daily. Succinylcholine was still being administered at the rate of about 15 drops per minute. About 9:45 a.m. the patient's respirations again became shallow, nail beds and lips became cyanotic, and it was evident that she was receiving too great a dose of succinylcholine. The intravenous drip was again slowed to 10 drops per minute, and the patient improved. However, even with the administration of 10 drops per minute, respirations became shallow again, and then ceased.

Succinylcholine was stopped, oxygen was given, and in about four minutes respirations returned to

normal. About 5:15 p.m. the patient had recovered from her depression. She was able to move her legs without pain, trismus was almost gone, and no hyperexcitability remained, so the drug was discontinued. A total of 1400 mgm. of succinylcholine had been administered during the previous 24-hour period.

The patient showed steady improvement, and the tracheotomy tube was changed on July 18. It was removed on July 29, and the opening was almost healed on August 1. She was discharged from the hospital on August 1, 1953, as improved.

DISCUSSION

Because of the ability to vary the dose of succinylcholine from minute to minute, and because the degree of muscle tone varies, the use of succinylcholine in continuous drip infusion seems to be the method of choice at present. However, the need for trained personnel in its administration and the ability to cope with emergency situations are still to be observed. Full knowledge of the physiology of respiration and the pharmacology of succinylcholine is necessary for their integration in the treatment of tetanus. The above treatment is only an adjunct to the accepted treatment of tetanus and lessens the need for heavy sedation.

Recommendation of a tracheotomy for aspirating mucous secretions of the nasopharynx, pharynx, and trachea is stressed because of the ease with which secretions can be aspirated in the presence of trismus

of the jaw. Increasing the dose of succinylcholine permits the passage of the catheter through the tracheotomy tube without irritation of the patient in a hyperexcitable state. At no time is the patient in danger of exhaustion from repeated convulsions or dehydration because of the continuous use of intravenous glucose as a vehicle for the succinylcholine. It is essential that fluid balance be maintained at all times.

CONCLUSIONS

The search for a drug of choice in the treatment of tetanus continues. However, the use of succinylcholine in combination with one or more of the barbiturates and antitoxin has lessened the severity of the disease. Further investigations by others may show variations in its administration and use, but the basic use of succinylcholine as the muscle relaxant of choice cannot be disputed at this time. A total dose of 4600 mgm. of the drug was administered over a period of 52 hours.

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Aside from diagnostic ability and essential kindness, there is probably no quality in a physician for which patients are so grateful as the ability and desire to explain, to answer their anxious questions fully and truthfully, to be as frank as knowledge will permit. From personal experience I know what unhappiness can result from failure to explain; I know also that few things in medical practice bring such deep satisfaction to doctor and patient as frankness.

H. M. Marvin, President

Connecticut State Medical Society

Acute Intussusception Complicated by Mesenteric Lymphadenitis, Suppurative Otitis Media, and Subacute Appendicitis: A Case Report

R. E. Bodmer, M.D., Ronald McCoy, M.D. and Frank Brosius, M.D.

Coldwater, Kansas

Intussusception is a fairly common type of obstruction in infancy and early childhood. The cause of the intussusception may not be clearly demonstrable, but several conditions should be looked for during surgery. These conditions may be as follows: (1) congenital bands between the terminal ileum and cecum, (2) small Meckel's diverticulum, (3) tumors, or (4) an unusually long mesentery of the cecum and ileocecal region. The dangers of prostration, shock, and gangrene of the intussuscepted portion of the bowel make immediate surgery necessary.

A five-months-old white male, B.V.D., Hospital Case 54286, was first seen the evening of May 21, 1954, with the chief complaint of vomiting once during the day. The mother stated that he would occasionally cry and scream and at the same time jerk his legs and arms. She thought he was quite sick.

Physical examination revealed a well nourished infant who looked pale but did not appear to be acutely ill. Rectal temperature was 101.5. The child was quiet during the examination. Bilateral otitis media was found; the right drum had perforated and was draining. There were small bilateral cervical nodes. No other positive findings were noted. The child was given intramuscular penicillin, and the parents were instructed to return the child to the office the next day.

The next morning the mother brought the child to the office. She was apprehensive and stated that the infant had passed a bloody stool that morning. She exhibited the diaper, and it appeared to have been well saturated with grape juice. While the child was lying on the examining table, projectile vomiting occurred. Physical examination revealed bilateral otitis media, cervical adenopathy, and a palpable mass about 2 x 2 cm. in the right upper quadrant. The diagnosis of intussusception was made, and the child was sent to the hospital for surgery.

Laboratory findings prior to surgery were as follows: red blood count 4,510,000; hemoglobin 11.0 gms. 72 per cent, white blood count 24,500, P74, L19, M3, T4.

Operative record: The child was given an ether anesthetic. After a right rectus incision it was seen

that the terminal ileum was markedly indurated. The intussusception was at the ileocecal valve, and it was reduced by gentle traction. Near the terminal ileum were many enlarged mesenteric lymph nodes, one of which was taken for a specimen. The serosa of the appendix was hemorrhagic. The appendix was removed. The incision was closed in layers.

Postoperatively the child was given 350 cc. 2.5 per cent dextrose in water by clysis, 400,000 units of penicillin daily, aureomycin otic drops every four hours. He was allowed to be breast fed five hours after surgery. The morning of May 23, 1954, (first postoperative day) the rectal temperature was 101.8. Peristaltis was present. The child was alert and seemed well. The right ear had ceased to drain.

The child became afebrile the second postoperative day, and penicillin was stopped on the third day. On the fourth postoperative day the child had a large, brown, soft stool. He was dismissed on the sixth postoperative day. Stitches were subsequently removed, and the child was checked several times in the office. The infant was kept on a liquid diet until July 6, 1954, when he was allowed to start eating Pabulum and meat.

Pathology: Pathology report of the mesenteric node revealed subacute lymphadenitis. Subacute appendicitis was also reported.

Summary: A five-months-old white male was seen with pallor, projectile vomiting, suppurative right otitis media, red currant jelly stool, and a palpable right upper quadrant mass. At surgery an ileocecal intussusception was found and several large mesenteric nodes were observed, one of which was taken for examination. The appendix was removed. Final diagnosis was: (1) ileocecal intussusception, (2) subacute mesenteric lymphadenitis, (3) subacute appendicitis, (4) bilateral otitis media with suppurative right otitis media, and (5) cervical lymphadenopathy.

Comment: We find this case interesting because of the proved mesenteric lymphadenitis in a patient at such a young age. One wonders if the lymphadenitis was the cause of the intussusception and further wonders if the otitis media could have caused a generalized adenopathy.

Objectives and Functioning of Winfield State Training School

John B. Smith
Winfield, Kansas

The Winfield State Training School is an agency of the state. Along with Parsons State Training School, Topeka State Hospital, Larned State Hospital, Osawatomie State Hospital, Boys' Industrial School, Girls' Industrial School, Kansas Receiving Home, State Sanatorium for Tuberculosis, and other institutions, it operates under the supervision of the Division of Institutions of the State Department of Social Welfare.

The school operates by virtue of statutory authority and within statutory limitations. These statutes in turn are based upon provisions of the state constitution adopted in the city of Wyandotte 95 years ago.

The State Board of Health, the State Department of Public Instruction, the State Fire Marshal, and the State Board of Regents are some of the departments and offices with which our mission brings us into contact.

The Kansas Council for Children and Youth, the Kansas Society for Exceptional Children, local chapters of the National Association for Retarded Children, and the Kansas State Teachers' Association are some of the voluntary organizations whose aims and purposes direct their attention to the work, philosophy, plans, and facilities of this school.

At Winfield we receive those who are under 6 or over 21 years of age who are mentally deficient or are incapable of receiving instruction in public schools, who require or may benefit from examination, treatment, care, training, or rehabilitation, and those with multiple handicaps of any age. Excepted are those who are insane or suffering severe mental disorder.

We have recognized and can demonstrate nearly all of the types of mental deficiency described by Jervis and listed in the publication *Rehabilitation of the Mentally Retarded* distributed by the Federal Security Agency.

Meriting notice here is the fact that morons, uncomplicated by other disabilities, are likely to be as they are because of genetics. They are, in most cases, much like their parents. In many instances, also, they suffer from the ravages of social deprivation occa-

sioned by membership in a sub-marginal family group.

The severely retarded, the severely handicapped, on the other hand, in most cases are from educated more capable parents whose interest and curiosity are stimulating and whose appreciation of any effort to help the child or the category of the handicapped is both gratifying and impelling.

Ages of those now present range from veritable infants to the very aged. About 125 are under 7 years of age; 100 are between 7 and 12; 170 are between 14 and 20; 600 are between 21 and 45; 400 are over 46. About 50 of these latter are in senility.

It is worthy of note that our population enjoys apparent immunity from polio, no case of such illness ever having been observed at the school. Our death rate was 27 per thousand in 1952 and 25 per thousand in 1953. It stands at 26 per thousand thus far in 1954.

Those received at the school include both sexes, all ages, and persons with nearly every type of handicap. In many, there are defects in sight, hearing, speech, gait, and coordination, alone or in combination. In many cases where aids or appliances might reduce these defects, the intellect required to use them effectively is absent.

The mission of the school requires that we examine, treat, educate, and rehabilitate those received so as to make them happier, more comfortable, and better able to care for and support themselves. We also provide care or physical rehabilitation for those who, because of age or physical handicaps, cannot benefit from an educational program.

To accomplish these missions there are three four-story dormitories constructed of stone, two three-story brick dormitories, one three-story building of steel, concrete, and brick construction, opened in 1951, in which medical and surgical facilities are concentrated. This we call the hospital building. It has a tubercular ward, two acute wards, a receiving ward, five pediatric wards, and three wards housing wheel chair patients, cardiacs, and others who are not able to climb the stairs in the dormitory buildings.

There are many other structures necessary for our population. Of these, the more important are the recently remodeled school building, the auditorium,

Presented before the Wyandotte County Medical Society, Kansas City, November 16, 1954. Mr. Smith is superintendent of the Winfield State Training School.

the industrial arts building, and the building housing the barber shop and the beauty shop.

There are 370 employees, all but the superintendent being under state civil service rules and salary ranges. Most of our medical service is rendered by consultants, not included in this number of employees. Five hundred of our school population have work assignments. Most of these assignments have training objectives and training value and are part of the training program.

Operating funds for the past fiscal year aggregated \$1,436,000. For the current fiscal year \$1,548,000 has been appropriated. For the forthcoming fiscal year, \$1,838,000 has been requested. Reduced to per diem cost per capita, these figures become \$2.81, \$3.03, and \$3.60, respectively. There are states whose per diem is shamefully lower than that of Kansas.

Nearly every service is undermanned and understaffed.

Most increases for the forthcoming fiscal year are to provide additional medical and nursing personnel, and, of course, improved medical and nursing care. Plans are well advanced for the opening of classes for development of psychiatric aides.

A sum of \$500,000 has been appropriated for construction of a new treatment or hospital building. There is a worthy resolution that this building will be preserved to the practice of medical arts and that gradual conversion into a dormitory may be avoided.

An additional sum of \$240,000 has been appropriated for a new warehouse. Of great interest, I think, is the location of this structure in what we are pleased to call a service area, apart and away from the seriously congested dormitory area, in which the present warehouse is located. There is also an appropriation of \$30,000 for a superintendent's dwelling.

Budget requests for the new biennium include funds for a new power plant, two dwellings for staff members, and two modern structures for the housing of children, also for installation of elevators, fire escapes, fire towers, and other remodeling of present buildings.

Our capacity, determined by the square foot per person method, is 931. Actually, 1,400 are lodged at the institution. Many of the expected difficulties associated with overcrowding and understaffing can be demonstrated. Even so, the training, medical care, and diet for the population are in sharply improved contrast to that which was available ten or even five years ago.

Public insistence, asserting itself in many parts of our nation and vociferously in Kansas, has resulted in Kansas rising in state ranking in care and treatment of the mentally ill and mentally retarded from near last place in 1949 to near first place in 1953. The rising tide of insistence upon improved care and

treatment in the field of mental hygiene has now extended to include the mentally retarded.

There is encouragement in the decreasing incidence of mental retardation due to hypothyroidism, prenatal syphilitic infection, deep x-ray therapy to pregnant mothers, and birth trauma. In most other etiologies, preventive measures are not yet developed, nor are the causes too well known.

Care and training of the mentally defective represent the areas in which great improvement has been made in recent years. Research, however, has been and is neglected. It is among the smallest items in our growing budgets. It is hoped that increasing parental interest in the enigma of the severely handicapped child will create the means and atmosphere in which research can flourish and bring forth increased knowledge of the ways in which these anomalies occur.

As to the incidence of mental deficiency we should consider the following:

The 1930 White House Conference on Child Health and Protection estimated that 13 per cent of our general population is subnormal intellectually, but socially adequate or potentially so. These can be and are usefully and gainfully employed. In addition to these, probably 2 per cent requires close supervision and extensive planning for their welfare. Of this latter group something less than half are so defective as to require constant care.

If these factors are applied to the population of Kansas, we are confronted with the uncomfortable likelihood that there are some 40,000 persons in our state who are subnormal intellectually and are without social potential; also that perhaps 20,000 of these are so handicapped as to require constant care.

Note should be made of variations in estimates of incidence of mental deficiency. I have seen estimates, so authored as to be worthy of attention, which place the ratio of the subnormal intellect without social adequacy at 6 per cent. Certainly it is true that there is no public facility for the care of such persons that is not overcrowded. All have waiting lists.

Sterilizations have been authorized by statute in Kansas since 1913. To date 2,063 sterilizations of mentally ill, 849 of mentally retarded, and 130 of others have been reported in Kansas. There were 24 sterilizations in institutions reported in Kansas in 1950. None has been reported for any subsequent year. Many of those sterilized in the training school have left the institution.

Much has been written on the prevention of mental deficiency by sterilization. Proponents assert that birth of mental deficient has been prevented in stated numbers—these numbers resulting from a multiplication of the number sterilized by a factor representing the number of children they would

have had but for sterilization. It has been said on good authority that neither cancer nor cardiovascular failure has been found in any castrate at Winfield State Training School. Acne and baldness are said to be absent in our castrates.

The statute under which these castrations have been done provides, in effect:

If the warden of the state penitentiary, the superintendent of the state home for feeble-minded, or the chief of officers of other institutions shall certify in writing to the governing board of the institution that he believes that the mental or physical condition of any inmate would be improved thereby, or that procreation by such inmate would be likely to result in defective or feeble-minded children with criminal tendencies, and the condition of such inmate is not likely to improve so as to make procreation by such person desirable or beneficial to the state, it shall be lawful to perform a surgical operation for the sterilization of such inmate as hereafter provided, etc.

We have mentioned the statutory or expressed mission of the school. We maintain that there are implied missions also. One such, which is accepted, is that of bringing some measure of understanding comfort and improved acceptance of the handicapped child to these homes where the handicapped child has made his appearance.

Parental reactions to the handicapped take on various forms. There may be denial that anything is wrong with the slow learner; blame for his lack of academic progress is heaped upon his school and his teachers. At the other end of the scale, there are parents who suffer withdrawn, Spartan silence. They avoid any contact which might produce reference to the hidden, handicapped child. Social repercussions, family disruptions, guilt, suspicion, self criticism, and fear of further child bearing may follow the discovery of the anomalous child in their households.

We think the doctor can be of great influence and can accomplish much good in this area. Medical literature contains well written papers leading persuasively to the plausible conclusion that the Mongoloid must, in the interest of parental mental health, be forthwith sent away to an institution. There are, no doubt, cases where this is true. But there are also many cases where this is not true, yet where application for institutionalization is made forthwith. Since the publication of Bowlby's *Maternal Care and Mental Hygiene*, there is growing conviction that the child, any child, even the child with impaired intellect, suffers even further impairment when deprived of maternal embraces, parental stimulation, and social acceptance. He makes the statement that rejection can and does produce devastating and irreversible damage to the child's intellect and to his social development.

We have joined those who assert that there is truth in the Scripture that man shall not live by bread alone. Neither can the impressionable child develop properly in a sterile atmosphere, no matter how well his meals may be planned and served, no matter how clean his crib.

We believe that any child and every child, including the severely handicapped, requires maternal embraces to satisfy a skin or body hunger for mother's arms and that the mother's arms are hungry for the feel of a child.

The child learns from a mother, he acquires a feeling of security; he learns to trust human beings; he learns to love and to be loved. He tastes the sweet of achievement; he feels the birth of ambition; he becomes a social being from his associations with his mother. With mother absent from him during the highly impressionable months and years of infancy, he loses a learning situation for which there is no complete substitute.

Rejection is a powerful influence upon the child. I think that rejection can be properly regarded as something like "social euthanasia."

The doctor is likely to be relied upon by parents to the exclusion of all other advice in planning for the handicapped child. Ministers are becoming increasingly alert to their responsibilities in family counseling. Seminaries are including the subject of mental hygiene in their curricula, not for the purpose of producing therapists but to improve the pastor's abilities to counsel. They are seeking to be useful in dispelling the fears and bewilderment which strike when a mentally retarded or physically handicapped child comes into the home that has prepared to receive a genius.

The retarded or handicapped child should remain in the home as long as this is at all possible. It is to his best interest that he do so. He should be sent to a training school only when that is in his best interest. That may be at pre-kindergarten age; it is likely to be at school age. We all know full well that there will be exceptions which indicate earlier admission, but we should recognize that however much infant admission might please a community or parents it will be hurtful to the child's ideal development.

This view is finding many supporters. A convincing evidence of this is to be seen in the 66 classes now organized and in session for children of school age having subnormal intellect. At least two of these classes accept children whose intelligence quotient is less than 50. Each of these is subsidized in the amount of \$1,500 per year by the state, through the State Department of Public Instruction.

There are some half dozen additional classes oper-

ated by school districts which do not qualify for this subsidy. There are other classes, not many, organized and operated by parent groups and independent of the public school system. There may be also some such classes in parochial schools, although I know of none.

The severely handicapped child is becoming the object of interest of educators, the clergy, the medical profession, voluntary groups, civic clubs, and public officials. Of great significance is the rapidly growing membership in parents' groups. Of equally great interest is the nature of objectives of these parent groups. One such group recently expressed hope that doctors will better understand the mother and her longing for her offspring. Unfortunate estimates have been made of the mother's capacity to accept the birth of a Mongoloid. Mother resentment

toward the doctor who urged that mother and child remain strangers has, to my knowledge, been a marked resentment.

They want playgrounds where their children can play. They want their children, with their handicaps, accepted as human beings.

The range of this discussion has been wide. It has touched upon social, economic, and educational aspects of mental deficiency. Reference has been made to the wide and presently deepening interest in the long rejected idiot and imbecile.

The object of the presentation has been to increase your professional interest in the defective child in the hope that such increased interest will speed the day when your research will result in a lowered incidence and in improved corrective therapies for the handicapped.

Eulogy of the Doctor

There are men and classes of men that stand above the common herd, the soldier, the sailor, the shepherd not infrequently, the artist rarely, rarelier still the clergyman, the physician almost as a rule. He is the flower of our civilization and when that stage of man is done with, only to be marvelled at in history he will be thought to have shared but little in the defects of the period and to have most notably exhibited the virtues of the race. Generosity he has, such as is possible only to those who practice an art and never to those who drive a trade; discretion, tested by a hundred secrets; tact, tried in a thousand embarrassments; and what are most important, Herculean cheerfulness and courage. So it is that he brings air and cheer into the sick room and often enough, though not so often as he desires, brings healing.

Robert Louis Stevenson

PRESIDENT'S PAGE

DEAR DOCTOR:

At the bottom of this page you will find no coupons, but I wish you would nevertheless vote "yes" or "no" on the question of continuing the President's Page in the JOURNAL.

The editor wants to continue but since this gives him free copy for one page—and not even a sense of responsibility—he is not unprejudiced.

I am definitely biased in that I dislike preparing my copy every month and know that I have no "message" for you that often.

The editor and I insist we each have your best interests at heart but we are diametrically opposed. What do you think?

J. M. Porter

EDITORIAL COMMENT

THE 1955 LEGISLATURE

The 1955 Kansas legislature convened on January 10 and ceased consideration of bills on April 2 although the session actually closed a few days thereafter. Something over 800 bills were introduced in the two houses, and, as always, the subject matter concerned a variety of items.

Approximately 60 bills were of sufficient medical interest that the Society attempted to follow their course. In the case of a few, various doctors of medicine actively supported or objected to their passage on the grounds that they were or were not sound health legislation.

The largest single group related to hospital construction. It is now possible for almost any political subdivision or a combination of political subdivisions within the state to unite in forming a hospital district, provided the issue is favorably voted upon. Legislation in this field merely expanded similar laws which had been previously written.

Possibly the most significant hospital legislation came in two bills which were introduced as a result of federal changes in the Hill-Burton Act. At the national level, money to aid hospital construction has been made available for building medical facilities, provided these are appropriately licensed by the state. A medical facility is something less than a hospital and something more than a boarding home. It is generally small, does not maintain facilities for major surgery, but is a place wherein a doctor of medicine cares for patients. To make Hill-Burton money available in Kansas, two bills were passed. The first defines such institutions and authorizes the Hospital Advisory Commission to approve these projects at its discretion. The second bill licenses such institutions by amending the Kansas Hospital Licensing Act.

Two significant problems of interest to physicians were referred to the Legislative Council for a two-year study. The Society Committee on Mental Health has for many sessions introduced a bill revising the commitment law. In each session this bill has failed to pass, which occurred again during the past session. However, the entire problem of mental health and laws relating to mental health was submitted to the Legislative Council in the hope that a bill covering the needs in this subject might be submitted to the legislature in 1957. The same situation prevails with reference to the Kansas coroner set-up. The disposition of these two subjects will afford the medical profession an opportunity to work with this signifi-

cant branch of the legislature in an effort to prepare sound legislation for the future.

Medical institutions generally fared rather well financially. Budgets were not materially reduced, and in most instances increases were granted where needed. By way of example, a tuberculosis sanatorium for southeast Kansas was approved two years ago. Chanute was selected as the building site. The 1955 legislature appropriated \$1,000,000 for this construction which doubled the original appropriation.

There were many other bills which did not pass, such as expanding the Commission on Alcoholism, prohibition of all fireworks, revision of the Blue Cross-Blue Shield board of directors to give laymen a majority on the board, providing distinctive license plates for doctors of medicine, the creation of a Department of Occupational Health in the Kansas State Board of Health, etc. Possibly of more general interest to the doctors of medicine is the fact that osteopathy again did not succeed in increasing its practice privileges in Kansas.

Osteopathic legislative efforts in the 1955 session were considerable. Identical bills introduced in the House and the Senate to increase osteopathic practice rights by redefining osteopathy were both killed. Identical bills creating a composite board of medicine and osteopathy were killed. Killed also were bills introduced in the Senate to permit osteopaths to use narcotics and to permit osteopaths to use barbiturates. In the final legislative days a resolution to submit this problem to the Legislative Council was introduced. When this resolution was amended to include chiropractors in the study, they objected with such force that the resolution was killed.

During a special called meeting of the House of Delegates shortly before the opening of the 1955 legislature, the position of the doctors of medicine of this state was clarified through a resolution. Dr. Eddy, president of The Kansas Medical Society, prepared a letter explaining this position and sent a copy to each member of the legislature. The integrity of this stand, the logic behind its purposes, convinced a majority of the legislators concerning this problem. Therefore, if any one reason can be cited to explain the outcome with reference to standards for health care, the letter which follows is probably the answer.

February 23, 1955

An Open Letter to the Legislature:

Dear Sirs:

Senate Bill 97 and House Bill 220 revive the seemingly endless question of osteopathic practice rights. During the years, enough dust has been stirred up that all of us have occasionally failed to see the issue clearly. We have permitted emotions to sway our judgment.

There comes a time when a critical evaluation is essential, and that is the purpose of this report. As

president of The Kansas Medical Society, I shall give you the opinion of the medical profession as honestly and as frankly as I can state it. If my remarks are something less than politic, it is because I am sincerely concerned that I shall not be misunderstood. I hope I may offend no one, nor speak unjustly in a single statement. But, I intend to be realistic.

There are several misconceptions regarding this problem. The first is that this is a fight between osteopathy and medicine. That is not true, nor can the wildest partisan of either side justify such position. Our objective is to protect the people of Kansas against the truly fearful hazards of physicians who have inadequate training for the practice of unlimited medicine and surgery.

By that I mean the person whose professional education has been of a quality lower than that required of a doctor of medicine may not perform surgery or administer drugs with safety to the public.

I am not condoning the tragic mistakes made by doctors of medicine. Do you think we don't know they occur? Our concern over this fact is the reason we have taken this position. That is why we are constantly raising our standards. Are we unreasonable to presume that a lesser educated physician will make more errors than the physician with broader learning?

A second misconception concerns our legislative efforts. Here too a little clear thinking will help.

Laws governing health, like laws on every other subject, are written by the legislature. Technical information is obtained from persons experienced in the subject under consideration, and that is where we become interested in legislation. Problems of health are our daily concern. The Kansas law regulating the practice of surgery and the use of drugs in the care of sick people is of vital interest to us. That is the law by which we are governed.

Therefore, we believe it our moral obligation to advise the legislature, not for our advantage, but for what we know to be in the best interests of the public. The subject of health is not an issue that lends itself to partisan politics, nor to sentiment in behalf of any individual or group. Health transcends economic considerations in importance because here life itself is at stake.

The Kansas legislature is well aware of this point or it would not have built our magnificent school of medicine to educate doctors.

The third point of misunderstanding concerns the often repeated statement that The Kansas Medical Society refused to reach an agreement with the Kansas State Osteopathic Association as requested by your resolution of two years ago.

I wish to flatly answer that charge in two ways. No—we did not compromise upon the principles in which we believe. Yes—we reached complete agree-

ment upon many principles of which these are most important.

1. License laws exist not for the benefit of the physician, but solely to protect the public.
2. There can be only one minimum standard in Kansas for the practice of medicine and surgery.
3. This standard must not be placed below that now required for doctors of medicine.
4. Educational systems of osteopathy or medicine can adequately be compared only by experts experienced in such work. These are available in the American Medical Association and in the American Osteopathic Association.

When The Kansas Medical Society and the Kansas State Osteopathic Association agreed upon these statements, it was our opinion that your legislative request of our societies was fulfilled. A Joint National Committee of the American Medical Association and the American Osteopathic Association was formed, but refusal by the colleges of osteopathy to permit the commission to visit their campuses delayed our effort. Finally, when five of the six schools agreed to cooperate, these visits have now begun. The sixth has, according to my information, not yet decided to participate.

Therefore, a report upon whether five of the six osteopathic colleges are teaching scientific medicine of good quality will not be ready for this legislature. But we insist that is not our fault.

Moreover, this report will not evaluate schools of osteopathy as schools of medicine are evaluated. Nor is that our fault. The American Osteopathic Association firmly refused to participate in this project until the American Medical Association guaranteed these visits would not be for the purpose of evaluating their schools.

Kansas osteopaths then wanted us to evaluate their schools in spite of their previous expression that we were not competent to judge them. The next step was the introduction of Senate Bill 97 and House Bill 220, and once again they are asking for complete practice privileges under their own supervision.

They say they are qualified but reject the only proper method to establish this fact—a method which they approved until it became apparent that the report would not be ready for this session.

They propose to create two standards for the regulation of medicine and surgery in spite of their previous contrary expression. And yet it is we, they would have you believe, who are responsible for the present failure to reach an agreement.

May I respectfully cite that the only agreement we could possibly have reached under the circumstances would be to recommend they be permitted to practice medicine and surgery, because that is what they want. That also is what we want for them—and I am completely sincere—but we want osteopathy to

achieve this privilege upon the same standards that are required of ourselves. We certainly do not expect them to do more, but for public safety we cannot agree that they be given this privilege with less.

Should anyone doubt the authority of my statement, I give you the official position of The Kansas Medical Society in the following resolution unanimously adopted by its governing body.

RESOLUTION

"The Kansas Medical Society continues its position to favor a single high standard governing the practice of medicine and surgery.

"Therefore, this Society will support and favor any measure that improves the standard of medical practice in the State of Kansas.

"This Society further goes on record to affirm its conviction that the approved standard of medical education is the minimum under which the practice of medicine and surgery may be performed with safety to the public.

"The Kansas Medical Society will welcome from any theory of healing the invitation to have its schools approved by the Council on Medical Education and Hospitals of the American Medical Association as fully accredited schools of medicine, which, when accomplished, will entitle its graduates to be examined as are doctors of medicine in preparation for receiving a license to practice medicine and surgery in this state."

In spite of my mention of osteopathy, this is actually a larger subject than that. We here offer to the legislature a formula under which osteopathy or any other theory of healing may safely be granted complete practice privileges. We will pledge you our assistance to osteopathy or to the schools of any other name that will seriously undertake to achieve these standards. If we recommended anything less, we would compromise our responsibility to the people you have licensed us to serve.

So, in closing, may I repeat this is the view of the doctors of medicine. I have tried to state it fairly, without rancor and without prejudice. The final decision can be made only by the legislature itself, so the ultimate responsibility is your own. It is you, not the doctor of osteopathy or the doctor of medicine, who will determine the standard of health care to be given the people of Kansas.

Very truly yours,
M. C. Eddy, M.D.
President

MEDICAL ADVERTISING

The word advertising carries a negative association for many physicians since it brings to mind a question of ethics. This discussion, however, concerns a

different type of advertising, a kind the writer views most favorably. We refer to advertisements concerning health published over the signatures of pharmaceutical firms, insurance companies, and others outside the health field.

Current literature and drama might lead one to believe that all advertising copy in this highly competitive era is devised and placed by agencies peopled with ulcer-afflicted executives. They are depicted as driving, self-centered individuals whose only objective is to coin slogans that will sell vast quantities of products ranging from bubble gum to cooking oils to cosmetics to cigarettes.

Who writes copy for the other kind of ads? These are the "institutional" advertisements, defined by Webster as "designed to create good will and prestige for a company and its products and not aimed at immediate sales." They are restrained yet effective, dignified yet eye catching, low keyed yet interesting.

An example of this type of advertising can be found in any popular magazine distributed nationally. A surprising amount of space is devoted to institutional copy, and an even more surprising amount refers directly or indirectly to health or to the medical profession.

Since many firms are now engaged in such advertising campaigns, it would be unfair to single out any particular one by name. Let it be inferred that the comments on one program reflect with equal favor on others carrying on similar projects.

Twenty-six years ago a pharmaceutical house began a series of educational messages to the public in several well known magazines (*Saturday Evening Post*, *Life*, *Time*, *Newsweek*, etc.), and the series is continuing today. Each message is different, but the major theme remains the same: the importance of prompt and proper medical care. No products are mentioned. That, the company believes, is the province and responsibility of the physician.





How is the idea conveyed? By illustrations and texts covering one particular type of illness, one specific situation. A man on a hilltop overlooking a village is pictured below the caption, "Does your community need a doctor?" "If so," the text continues, "the physician you're looking for may be the one who's looking for you." There follows a résumé of the items a physician checks before locating in a given community. Isn't this appropriate in Kansas? Numerous communities ask the medical society for help in securing resident physicians; many doctors, in turn, seek information on locations.

"Do you know this man?" That question at the top of another ad introduces pictures of a man later on identified in generalities. "His negligence is causing thousands of deaths from heart disease." The text lists a familiar group of symptoms: overweight, shortness of breath, that tired feeling, occasional at-

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Compared with certain other antibiotics, ACHROMYCIN offers a broader spectrum of effectiveness, more rapid diffusion for quicker control of infection, and the distinct advantage of being well tolerated by the great majority of patients, young and old alike.

Within one year of the day it was offered to the medical profession, ACHROMYCIN had proved effective against a wide variety of infections caused by Gram-negative and Gram-positive bacteria, rickettsiae, and certain viruses and protozoa.

With each passing week, acceptance of ACHROMYCIN is still growing. ACHROMYCIN, in its many forms, has won recognition as a most effective therapeutic agent.



LEDERLE LABORATORIES DIVISION *AMERICAN Cyanamid COMPANY* Pearl River, New York

*REG. U. S. PAT. OFF.

tacks of indigestion. It of course carries the admonition, "See your doctor."

A page headed with an illustration of a little girl starts off with "There's a brighter outlook now for the child with epilepsy . . ." Especially effective was another ad showing a large group of men, women, and children and a question, "How many of these people need a doctor?" The answer, "All of them," told of the benefits of good health care and preventive medicine.

The company responsible for those ads outlines its objectives as follows: "Above everything else, we try for plausible, believable messages that will nudge the reader into action without either raising false hopes or scaring him. We want him to have not only increased confidence in his doctor, but in the professional background and skill of the pharmacist who fills the prescription and in the medicine itself."

Some life insurance companies have similar programs of lay education. There is no way of evaluating the effectiveness of such plans, but certainly the public welfare is advanced by increased knowledge of nutrition, chronic diseases, immunizations, and a better understanding of the medical profession.

Consumer booklets also help to tell the story. "Should Your Child Be a Nurse" is the title of one recently published by a life insurance company to answer common questions on the nursing profession. The cost of drugs is a subject receiving attention from the National Pharmaceutical Council in another booklet, "I Hate to Buy Drugs, But . . ." It points out that medicines today which cure and alleviate certain conditions, uncontrollable a short time ago, are actually "diamond-studded bargains."

In recent years physicians have become increasingly aware of the importance of good public relations. They know that individually they need have no care as long as their medical services prompt patients to speak with pride of "my doctor." Collectively they can appreciate the public relations work being done for the profession by others.

HEALTH INSURANCE COVERAGE

Americans with voluntary health insurance protection have passed the record-breaking 100 million mark, it was reported recently by the Health Insurance Council on the completion of its eighth annual survey. This insurance protection covers more than 60 per cent of the total population of the United States.

Figures based on a conservative projection of the data presented in the survey indicate that 103 million persons carry insurance against hospital expenses, 88 million have some form of surgical expense protection, and 47 million have basic medical expense

protection. Nearly 38 million workers carry insurance against loss of income from disability.

The total of benefit payments of health insurance claims reported for 1953 exceeded \$2.5 billion. Of the total, more than half went to help meet hospitalization expenses of beneficiaries, and more than \$675 million went for surgical and medical care.

A comparison of the above figures with those applicable in 1941 demonstrates increased public acceptance of such coverage. Eight times more people now have insurance which pays hospital benefits; 15 times more people have surgical insurance.

Insurance against major medical expense is the newest form of voluntary coverage. Now more than 1.2 million persons are insured against the costs of catastrophic illness, a gain of 80 per cent during a period of one year. Such insurance goes beyond customary policies in protecting against unusually large hospital and doctor bills. It also provides coverage for expense due to disability and the cost of special duty nursing, artificial limbs and appliances, and drugs and medicines.

Organizations surveyed in the Council's report include insurance companies, Blue Cross, Blue Shield, and various independent plans sponsored by business and industry, by employee benefit associations, and by private group clinics.

STUDY REQUIREMENTS OF A.A.G.P.

The definition of postgraduate study requirements for members of the American Academy of General Practice was clarified recently by the Committee on Education of the organization. The committee emphasized that each member must complete 150 hours of credit each three years with at least 50 hours in "formal study course."

Recognized for "formal" credit are postgraduate courses given by a medical school, courses initiated by the A.A.G.P. or its constituent chapters, publication of a scientific paper in a national journal (15 hours), or publication of a scientific paper in a state journal (5 hours).

Informal credit hours may be acquired by attending scientific meetings of the A.M.A. or its local or state constituent societies, hospital staff conferences, clinicopathological conferences, postgraduate seminars and assemblies, scientific programs given by the American Heart Association, the American Cancer Society, and the like, and meetings of various clinical societies.

Ninety per cent of today's prescriptions are for medicines that didn't even exist 15 years ago, Parke, Davis and Company points out.



My six-year-old daughter recently brought home from school a sheet of paper on which the day's art project surrounded some wonderful child's-eye views of the family written by Deborah Walker. Mothers were described as "people who are always getting after you about manners, language, homework and dirt. You can get very mad at mothers because they're always fussing about something you have or haven't done, but when you're hurt or sick it's your mother you want—no matter how old you are. Besides, when mothers are all dressed up to go someplace, they smell awfully good.

"Mothers are always saying that if you do something just once more you'll get a good spanking, but you don't get it very often no matter how many P-TA lectures she's heard about always carrying out what you threaten.

"If you are a girl, your mother gets pretty impatient with you at times, but she is the one who sits up half the night to make you a dress so you'll look as good as the other kids.

"Mothers fuss at fathers a lot, too, but if you say anything bad about him, she tells you that you've got the best father in the world and it's about time you started appreciating him."

Much has been written, painted, and sung telling the wonderful characteristics of Mother. It is difficult to exaggerate—or even to be adequate—in portraying the character-building qualities of mothers. How much we all owe to them, and how little of it can be repaid!

From a childhood view we come to a more mature conception of motherhood, and develop a realization that here is the beginning of most things worthwhile in our lives. An appreciation of art, music, literature, and religion, the distinction between good and bad, and an understanding of the value of honesty, fairness, kindness, and sincerity and love are more apt than not to come first from our mothers. In a life so crowded with lesser things, we need such a guide to help recognize the worthwhile things.

I have been fortunate in having the teaching and inspiration of a wonderful mother. Left by the premature death of my father with the responsibility of supporting a 15-year-old boy, she did this through her music—as a church organist and in teaching children to play the piano (the little tykes who were beginners were always her favorites). Both were truly labors of love, but as I look back, what a terrific demand they made on her time and energy, with all manner of "extras" added, both church and civic.

Characteristically disregarding her own welfare and convenience, she has given freely of her talents to and for all. Being a church organist for over 50 years is evidence of an interest in religion, but hers is far more than an interest. Her religion is a way of life for every day, not a cloak put on for Sundays and put away between them. Her interest in and devotion to the activities of the church were so great that she continued this work far longer than was good for her own health, and only relinquished it early this year when physical disabilities made it impossible to continue longer. Beloved by the entire large congregation, she has the satisfaction of realizing that she stopped playing while she was still wanted. A congregational dinner in her honor afforded an opportunity for numerous expressions of appreciation for her years of devoted service.

We know of many sacrifices our mothers have made for us, but who could be so naive as to think he realized all! We have received benefits from our mothers which can only be repaid as they are passed on to others. To fulfill the dreams and hopes which they have for us is more often a goal than an accomplishment.

An expression of appreciation to my mother, who is a fine mother-in-law and a beloved grandmother too, is also a tribute to every mother on the occasion of her special Mother's Day. God was good to us when he gave us our mothers.—O.R.C.

Carcinoma of the Larynx

Tumor Conference

Edited by Kay Williams, M.D.

Dr. Stowell: The case for presentation today is one of a patient whose only complaint is hoarseness. We would like to discuss the differential points of diagnosis and the possibilities of treatment.

Dr. Lange: This 60-year-old white man was admitted to the hospital with a chief complaint of hoarseness of two years' duration. The hoarseness had been intermittent for approximately one year and had then become persistent and progressive. He had no weight loss, dysphagia, hemoptysis, or other related symptoms. He gave a history of smoking one-half package of cigarettes daily.

General physical examination was essentially negative. The larynx was well visualized. A rather large, fungating mass was seen on the left vocal cord on indirect visualization. The cord moved normally, however, and there was no involvement of the anterior commissure. Direct laryngoscopy confirmed these findings. Further examination revealed no palpable lymph nodes in the neck. Esophagoscopy was performed and the esophagus appeared normal. Laboratory examinations were within normal limits.

Dr. Proud: On examination, the lesion appeared to be a papilloma, hyperkeratosis, or a carcinoma. Visualization of the lesion and biopsy are almost always necessary to make the diagnosis. The larynx can be visualized by a laryngeal mirror or direct laryngoscopy. Actually, both methods should be used.

Carcinoma must be distinguished from benign tumors and inflammatory lesions. The appearance of the vocal cord involved will help some in the diagnosis. Benign tumors do not infiltrate and rarely fix the cord. If ulceration occurs, usually it is late.

Inflammatory lesions may be ulcerated and are usually diffuse rather than focal. Chronic laryngitis, tuberculosis, and syphilis are the important inflammatory diseases encountered in the larynx. Tuberculosis is generally associated with active pulmonary disease. Thickening of the cords or shallow ulcerations and papillary hypertrophy in the interarytenoid space may occur. This area is rarely involved in carcinoma. Syphilitic lesions are diffuse, hyperplastic, or ulcerated. Tests are available which aid in the diagnosis of these diseases.

Dr. Stowell: Doesn't this patient's clinical history point to a diagnosis of carcinoma?

Dr. Proud: Yes, hoarseness is the earliest, most common, and most important symptom. It is a warning not to be ignored while the disease is still curable. It should mean carcinoma of the larynx till proven otherwise. The dysphonia may be accompanied by vocal fatigue and poor voice control.

Most of the other symptoms occur late in the course of the disease. Dyspnea results from direct extension of the tumor, superimposed infection, or edema causing obstruction. Discomfort, manifested by a feeling of sticking or a sense of a foreign body, may develop early, but pain is a late symptom. Cough resulting from reflex irritation is usually present sometime during the course of the disease. Dysphagia may develop terminally, due to obstruction or fixation of the esophagus.

This patient fits into the class having the highest incidence of carcinoma of the larynx. These tumors are far more frequent in men than women. They occur in the age group past 50 but rarely before 40 years. Because of the prevalence in men, an effort has been made to implicate cigarette smoking as a causative agent. So far as I know, no relationship has been proved.

Dr. Stowell: Frequently, we get biopsy specimens that are so small a diagnosis cannot be made and a re-biopsy is necessary. What are the dangers, if any, in such instances?

Dr. Proud: It is difficult to say how much tissue one can take from the larynx, on biopsy, without causing irreparable damage to the vocal cord. If a patient has a benign lesion, it is a tragedy to destroy the larynx by taking large biopsies. If the patient has malignant disease, it is advisable to take an adequate specimen because the use of that one cord is destroyed anyway.

Dr. Stowell: Close cooperation between the clinician and the pathologist is of utmost importance in the diagnosis of many lesions of the larynx. The clinical impression of a skillful laryngologist should be considered by the pathologist. A re-biopsy might be indicated if the initial histologic findings fail to confirm a suspected clinical diagnosis of malignancy.

Hyperkeratosis with dyskeratosis and acanthosis is sometimes difficult to distinguish, histologically, from carcinoma. There may be pseudoepitheliomatous hyperplasia, but invasion cannot be demonstrated on the basis of one or two microscopic sections. This is a situation in which the pathologist might consult with the clinician and ask for another biopsy.

Cancer teaching activities at the University of Kansas Medical Center are aided by grants from the National Cancer Institute, U.S. Public Health Service, and the Kansas Division of the American Cancer Society. Dr. Williams is a trainee of the National Cancer Institute.

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3. The Rotation (swivel chair) Test. The patient sits in a swivel chair with his eyes closed and his head on a level plane. The chair is turned through ten complete revolutions in twenty seconds. Stimulation of a normal labyrinth will cause nystagmus, past pointing of the arms and subjective vertigo.

Notes on the Diagnosis and Management of "Dizziness"

I. Vertigo

The term "dizziness" (vertigo) should be restricted to the sensation of whirling or a sense of motion.¹ This sensation is usually of organic origin and is the tangible symptom of a specific pathology.

Moderate vertigo, with a sense of motion and a whirling sensation, may be produced by infection, trauma or allergy of the external or middle ear. Examination of the ear will usually disclose the abnormality.

Severe vertigo, which will not permit the patient to stand and causes nausea and vomiting, indicates an irritation or destruction of the labyrinth. The specific condition may be labyrinthine hydrops, an acute toxic infection, hemorrhage or venospasm of the

labyrinth or a fracture of the labyrinth. Multiple sclerosis and pathology of the brain stem should be considered also.

It is important to learn if the patient's sensation is continuous or paroxysmal.² Paroxysmal vertigo suggests specific conditions: Ménière's syndrome, cardiac disease and epilepsy. Continuous vertigo without a pattern may be due to severe anemia, posterior fossa tumor or eye muscle imbalance.

Dramamine® has been found invaluable in many of these conditions. In mild or moderate vertigo it often allows the patient to remain ambulatory. A most satisfactory treatment regimen for severe "dizziness" is bedrest, mild

sedation and the regular administration of Dramamine.

Dramamine is also a standard for the management of motion sickness, is useful for relief of nausea and vomiting of radiation sickness, eye surgery and fenestration procedures.

Dramamine (brand of dimenhydrinate) is supplied in tablets (50 mg.) and liquid (12.5 mg. in each 4 cc.). G. D. Searle & Co., Research in the Service of Medicine.

1. Swartout, R., III, and Gunther, K.: "Dizziness." Vertigo and Syncope, GP 8:35 (Nov.) 1953.

2. DeWeese, D. D.: Symposium: Medical Management of Dizziness: The Importance of Accurate Diagnosis, Tr. Am. Acad. Ophth. 58:694 (Sept.-Oct.) 1954.

SEARLE

Dr. Boley: The fragments taken from the anterior commissure and the posterior one-third of the vocal cord in this patient contained only necrotic mucinous debris and blood. The first biopsy specimen from the mass, in the center of the cord, shows papilloma. However, a second specimen from the mass reveals a different histologic picture. Squamous epithelium with hyperkeratosis is seen. A slight amount of underlying stroma is present, into which nests of well-differentiated tumor cells have invaded. This can no longer be considered a simple papilloma but is now a malignant tumor. I think that it is a low grade malignancy, however.

Dr. Stowell: The majority of carcinomas of the larynx are of relatively mature squamous cell type and of low grade malignancy. The anaplastic cell type occurs in a small percentage of cases. Spread is relatively slow and occurs by infiltration and direct extension or invasion of lymphatics.

Histologically, papillomas frequently show extension of the rete pegs into the underlying stroma, though there is no evidence of invasion. The cells are well-differentiated squamous cells.

Dr. Proud: Papilloma and hyperkeratosis are premalignant lesions. Usually in the adult, papilloma is a small discrete lesion in the middle third of one cord. The condition is relatively rare but is more frequent in children than in adults and more common in girls than boys. Papilloma may occur in infants only a few weeks or months old; however, it is usually seen in children for the first time at the age of four or five years.

The etiology of papilloma of the larynx remains unknown, but it is generally felt that it is of viral origin. As yet, no one has successfully cultured the virus. It has been reported to grow in the conjunctival sac of the examining laryngologist. These lesions are extremely prone to recur in children. The treatment of choice is repeated scalplings of the papillomas, in order to prevent obstruction of the glottis and asphyxia of the patient. On occasion, the papilloma will be of such gross proportions that it will obstruct the airway at the onset, thereby necessitating a tracheotomy. Subsequently, it may be found in the tracheal stoma and even farther down in the trachea and major bronchi. With repeated removals, there will inevitably be some damage to the larynx. Scar tissue and web formation sometimes occur with stricture of the larynx. Complete cure is the usual outcome if operation is carried out as soon as possible. If papillomas persist too long, however, the tendency to malignant degeneration is generally greater. Obviously, this is true in adults as well as children.

Hyperkeratosis is also considered premalignant. If this were hyperkeratosis of the larynx a laryngofissure, rather than removal by direct laryngoscopy, might be indicated to really eradicate it. These lesions

also recur again and again, and eventually malignant degeneration takes place. Actually a patient with extensive hyperkeratosis of the larynx is going to have some difficulty with his voice regardless of what treatment is used.¹

Dr. Stowell: That raises the question, Dr. Proud, of what you contemplate for this patient.

Dr. Proud: I feel that this is truly carcinoma and that one should do a wide field laryngectomy and unilateral radical neck dissection. The best way to cure cancer still appears to be to cut well and widely around it. Unfortunately, a lesion confined to the middle third of one cord is much rarer than more advanced lesions. These can be approached quite well by laryngofissure, or medial thyrotomy, and the prognosis is good. When the tumor is extensive and reaches the anterior commissure, the patient should have a laryngectomy. A radical neck dissection adds little more to the morbidity and mortality and often eradicates non-palpable metastases.

There are certain postoperative factors to keep in mind regarding a laryngectomized patient. The functions of the larynx must be carried out by some other means. The patient is unable to talk or do heavy manual labor. A new method of speaking must be learned. These things are of extreme importance to the patient, and help and encouragement from the physician are necessary.

The operative mortality for laryngectomy is low. In selected series, some operators report 1 per cent. Naturally, it is not so good in patients who are poor surgical risks. Figures for five-year arrests as high as 74 per cent are given by some surgeons.²

Dr. Stowell: Dr. Tice, what is the status of the use of x-ray therapy for carcinoma of the larynx?

Dr. Tice: Irradiation therapy is of value in treating the more anaplastic tumors, especially those cases too far advanced for surgical removal. Well differentiated carcinomas of the larynx respond poorly to x-ray treatment. The usual dose given is 5,000 to 6,000 roentgens into the larynx which is sufficient to denude the epidermis. As with surgery, success seems to be totally related to the stage of the disease at the time it is treated.

Dr. Youngstrom: Some recent studies have shown results, with the use of roentgen therapy, to be practically equivalent to surgical results for comparable material. As with surgery, the small, intrinsic lesions of the larynx respond best. Harris, Silverstone and Kramer³ report 77 per cent five-year arrests in a group of intrinsic lesions treated by x-ray.

Many therapists believe radiation to be preferable in the treatment of the small intrinsic lesions.⁴ There are two distinct advantages to the use of x-ray therapy. First, if the lesion has extended farther than can be appreciated clinically, roentgen rays will eradi-



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cate it; second, this method will leave the patient with a better voice.

There are a few disadvantages, also. The dose of x-ray given is fractionated, preferably over a period of a month. This becomes tedious for the patient. Though this method cuts down on ill-effects, complications do occur. The degree of reaction which results is in proportion to the dose and length of treatment.

The laryngeal cartilages are extremely sensitive to x-ray. If over-dosage occurs, a perichondritis will result with necrosis and abscess formation. Occasionally, extension of infection into the cartilage before radiation might occur, and this is considered a contraindication to this method of treatment. If necessary, antibiotics should be used for prophylaxis against infection before, during, and after treatment.

Dr. Boley: Do you think that any patient is seriously harmed by a trial of radiation therapy?

Dr. Proud: I think that trial x-ray therapy might very well be harmful. If the tumor does not respond, time is lost. The earlier one attacks a carcinoma, the better the likelihood for cure. It also makes the operation infinitely more difficult. The patients hemorrhage more, the lines of cleavage are ill defined, and scar tissue is present. If recurrences develop post-operatively, they are easily discovered by the laryngologist, and x-ray therapy can be used to obtain further arrest. On the other hand, if irradiation of the larynx is carried out, the edema and fibrous distortion make follow-up observation almost impossible. I think that there are advantages to both methods of treatment. I would rather attack a small lesion surgically and leave the terribly extensive ones to the radiologist. I am sure he would rather reverse the situation.

Dr. Youngstrom: I believe that a combination of x-ray treatment and surgery can be carried out, in some cases, without serious loss to the patient. Certainly, these cases should be carefully picked and therapy planned so that if surgery is necessary it can be done five to six weeks following irradiation. This is the stage following hyperemia and preceding fibrosis. However, indiscriminate use of x-ray just to test sensitivity is poor treatment. The extent of the lesion and its radiation sensitivity should be evaluated and the best method of therapy decided upon. If radiation failure does occur, then laryngectomy should be carried out.

In far advanced lesions, survival rates are poor with any form of treatment. A small percentage of arrests have been obtained with roentgen rays, however, and the situation is not entirely hopeless.

Dr. Stowell: This case illustrates many of the problems of diagnosis and treatment of carcinoma of the larynx. Because of the early production of symptoms and slow spread of tumor, in many instances carcinoma of the larynx may be treated satisfactorily if diagnosed promptly.

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COUNTY SOCIETIES

A joint meeting of the Montgomery County Medical Society and the Montgomery County Bar Association was held at the Coffeyville Country Club recently with 47 physicians and attorneys in attendance. Problems having to do with Workmen's Compensation were discussed by three speakers, including Dr. Stephen S. Ellis of Coffeyville.

Dr. Donald L. Rose, of the University of Kansas Medical Center, was guest speaker at a recent meeting of the Labette County Society. The program was preceded by a dinner at which the doctors' wives were guests.

Dr. Smith Freeman, of the Department of Biochemistry, Northwestern University, was guest speaker at a meeting of the Shawnee County Society held in Topeka on March 7. His subject was "Blood and Urinary Steroids in Health and Disease."

Mr. Leo Brown of the A.M.A. Department of Public Relations, Chicago, addressed the society at its April meeting.

A meeting of the Sedgwick County Society was held in Wichita on March 1. Dr. Lewis L. Coriell, medical director of Camden Municipal Hospital, Camden, New Jersey, spoke on "Virus Diseases" and conducted a clinic at St. Joseph Hospital. Dr. Roy C. Knappenberger and Dr. William F. McGuire were moderators.

The program for the April 5 meeting was devoted to a study of forensic medicine with Dr. LeMoyne Snyder, Lansing, Michigan, as speaker.

Guest speaker at the March 15 meeting of the Wyandotte County Society at the Kansas City-County Health Building was Mr. James E. Marshall, field supervisor of the Division of Special Education, Kansas State Department of Public Instruction. Also on the program was a panel discussion on "Phase Mi-

Historical Material Needed

In preparation for the observance of The Kansas Medical Society's centennial anniversary, members of the Committee on History are attempting to collect all material of historical interest. Physicians who can contribute information, records, etc., are urged to send such to

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The Saline County Medical Society, in conjunction with the Salina Bar Association and the Kansas Association of Plaintiffs' Attorneys, sponsored a meeting on April 22 for a study of the Workmen's Compensation Act.

A study of indigent medical care was made by the Wyandotte County Society at a meeting held in Kansas City on April 19. Taking part in the discussion were Dr. W. J. Feehan, moderator; Mr. Rueben M. Dalbec, of The Kansas Medical Society; Mr. Ray E. Selbach, of the Shawnee County Medical Society, and Mr. Blake Williamson, attorney for the Kansas State Board of Medical Registration and Examination.

THE MONTH IN WASHINGTON

Editor's Note. The following summary of Washington news was prepared by the Washington office of the A.M.A. for distribution to state and regional medical journals.

This session of Congress probably is more than half over. On health legislation, two things are becoming apparent. First, Congress is not attaching much urgency to some of the early-blooming issues that were so prominent in January and February. For example, it has been in no hurry to take up such subjects as reinsurance for health plans, guarantees of mortgage loans for health facilities, expanded care for military dependents, or health insurance for government employees. Action may yet come in a rush, and some of these bills may be passed, but not all. The second fact is that Congress this year does seem willing, if not anxious, to take some action on mental health.

One explanation of the slow pace of most health bills may lie in the fact that this is only the first session, and that bills not passed this year may be enacted next year, an election year. At any rate, unless a bill is definitely voted down, it remains alive until the 84th Congress adjourns in 1956.

At the top of the list of favored mental health bills are identical measures by Chairman Priest of the House Interstate and Foreign Commerce Committee and Chairman Hill of the Senate Labor and Public Welfare Committee. These bills, which were not initiated by the Eisenhower administration, provide \$1,250,000 in grants for a three-year survey by non-governmental professional groups of all phases of mental health. Presumably the survey would be con-

ducted by a Joint Commission on Mental Health, formed by the A.M.A. Council on Mental Health and the American Psychiatric Association, with a number of other groups participating.

Considered by these committees at the same time was the administration's proposal for a three-year program of outright grants to states for new and existing mental health programs with Congress deciding on the money needed.

The survey bill was reported favorably by the House Committee within 10 days after hearings were completed. The grants proposal was held up with the explanation that it properly should be considered with legislation not then before the committee.

The Priest committee then turned its attention to fields other than health; it also has jurisdiction over legislation on railroads, aviation, communications, and federal power. Senator Hill's committee continued on health bills, next taking up his and Senator Bridges' bill for a three-year, \$90 million grant program for construction of non-federal laboratory facilities for research in a wide range of chronic diseases.

The measure failed to get A.M.A. support, the Board of Trustees deciding it was too broad and loosely written. Dr. George F. Lull, A.M.A. secretary-general manager, pointed out to the committee that the bill gives no voice to the states and local communities in development of a planned and integrated system of laboratory and other research facilities.

Prior to final Appropriations Committee action on next fiscal year's budget for the Federal Civil Defense Administration, the A.M.A. urged favorable consideration of the agency's request for medical supplies and equipment. Dr. Lull made the point that it was futile to plan for the medical phase of civil defense unless the profession has the supplies to work with. He warned of the medical problems that would arise from an enemy attack, including radioactive fallout. The House proceeded to approve a \$30 million appropriation for stockpiling of supplies and equipment, \$5.3 million less than the administration asked. However, the committee pointed out that FCDA has millions of dollars in unexpended balances.

This same appropriations bill carries approximately \$750 million for the Veterans Administration medical budget for the next fiscal year. The measure contained one surprise: an unexpected \$16,885,000 increase for a start on remodeling certain VA hospitals. The VA originally asked the Budget Bureau to approve \$20 million for this purpose, the Bureau pared it down to \$13, 815,000, but the House raised it to \$30 million.

Another bill that moved through the House with a minimum of controversy was one re-establishing the authority of the Secretary of Health, Education, and Welfare to channel surplus government property to health and educational institutions at no cost.



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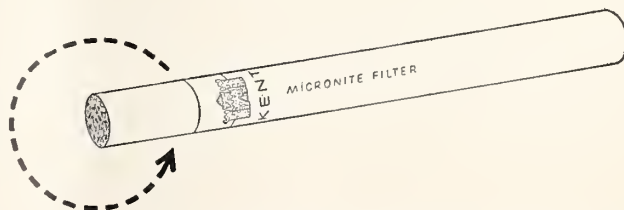
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Death Notices

WILLIAM ERNEST MICHENER, M.D.

Dr. W. E. Michener, 73, an active member of the Shawnee County Medical Society, died at a Topeka hospital on February 24. He had practiced in Topeka for 33 years, opening his office shortly after graduation from the University of Kansas School of Medicine in 1910. He was a veteran of World War I.

FLOYD ERNEST RICHMOND, M.D.

Dr. F. E. Richmond, 82, who had practiced in Stockton for about 35 years, died on February 22 after suffering a heart attack. He had served as a physician for the Missouri Pacific Railroad for 40 years and had been health officer for Rooks County for 20 years. He was an honorary member of the Central Kansas Medical Society. Dr. Richmond received his education at the Central Medical College of St. Joseph and the Kansas City Medical College, being graduated from the latter in 1902. He had practiced in Logan and Downs before opening his office in Stockton.

OLIVER SMITH RICH, M.D.

Dr. O. S. Rich, 73, who had practiced in Wichita since 1907, died there on March 1 after an illness of several weeks. A graduate of Hahnemann Medical College and Hospital, Chicago, in 1907, Dr. Rich specialized in internal medicine and remained active until early this year. At one time he served as a member of the Kansas State Board of Medical Registration and Examination. He was an honorary member of the Sedgwick County Medical Society.

FRED CLAYTON ALBRIGHT, M.D.

Dr. F. C. Albright, 76, an honorary member of the Bourbon County Society, died at a Fort Scott hospital on March 15. He had practiced for many years in Garland. A graduate of University Medical College of Kansas City in 1910, Dr. Albright first had an office in Metz, Mis-

souri, and later in Bronough. During World War I he served in the Army medical corps, attaining the rank of colonel, and was awarded the Distinguished Service Cross for bravery in action. He began his practice in Garland in 1919.

CHARLES WALTER LYON, M.D.

Dr. C. W. Lyon, 79, who had practiced in Ellinwood since 1920, died there on March 3. He was an honorary member of the Barton County Society. Dr. Lyon was graduated from Marion Sims College of Medicine, St. Louis, in 1897. During World War I he served with the Army in Europe, and he remained there for some time afterward to help with hospital reconstruction and staffing work in Albania and the Balkans. Upon his return to this country, he opened an office in Ellinwood.

E. RUSSELL JACKA, M.D.

Dr. Russell Jacka, 48, suffered a heart attack and died at his home in Wichita on March 28. A psychiatrist, he had been practicing in Wichita for three years and before that had been associated with the Hertzler Clinic, Halstead. During World War II he served in the medical corps of the Army. Dr. Jacka was graduated from Tulane University of Louisiana School of Medicine in 1931 and took his specialty training at the University of Michigan, completing his work there in 1948. He was a member of the Sedgwick County Medical Society and of the American Psychiatric Association.

PINKNEY SHANNON TOWNSEND, M.D.

Dr. P. S. Townsend, 69, a member of the Montgomery County Society, died at Coffeyville Memorial Hospital on April 6. He was graduated from the University of Kansas School of Medicine in 1910 and received his Kansas license the same year. He practiced first at Oswego, moving to Coffeyville in 1923 to specialize in surgery. He continued to practice there until his death.



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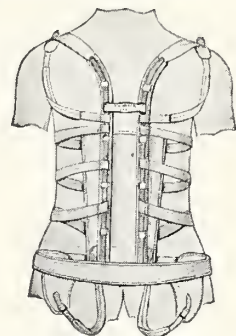
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ACTIVITIES OF MEMBERS

Dr. Louis A. Donnell, Wichita, addressed the Sedgwick County Medical Assistants' Society recently on the subject of "A Doctor's Civic Responsibility."

Dr. Ray F. Lowry, El Dorado, was called into the service recently and reported for duty at Fort Sam Houston, San Antonio.

Dr. Addison C. Irby, Fort Scott, was named grand senior deacon for Kansas at the annual session of the Grand Lodge of Kansas, A.F. and A.M., held at Wichita recently.

Dr. Edward D. Greenwood, of the Menninger Foundation, Topeka, was one of the speakers at the seventh annual Cowley County Health Education Workshop, held at Arkansas City in March.

Dr. H. L. Hiebert, Topeka, is one of the new members of the board of directors of the Shawnee County Association for Mental Health.

Dr. J. Roderick Bradley, who recently left Greensburg to report for active duty with the armed forces, has been assigned to MacDill Air Force Base near Tampa, Florida.

Dr. Murray Minthorn, Junction City, is serving as secretary-treasurer of an organization of physicians and pharmacists in Geary County.

Dr. Orville S. Walters, Topeka, was guest speaker at a recent meeting of the Missouri Chapter of the Christian Medical Society at Columbia, Missouri.

Dr. Lloyd W. Hatton, Salina, addressed the Parent-Teacher Association at Wilson on the subject of "Mental Health" recently.

Dr. George M. Gray, Kansas City, a charter member of the YMCA there, was awarded a citation for service at a meeting of the association held recently.

Dr. Gordon S. Voorhees has been re-elected president of the Leavenworth City-County Health Board.

Dr. Conrad M. Barnes, Seneca, was one of the speakers at the National Conference on Rural Health held in Milwaukee in February.

Dr. Charles F. Taylor, who has been superintendent of the State Sanatorium for Tuberculosis at Norton for 25 years, was guest of honor at a dinner at the sanatorium on March 17 to observe the anniversary.

Dr. Henry Shields Haerle, Marysville, who served in the Army in World War II, has received orders to serve with the Air Force in Alaska.

Dr. A. W. Butcher, who has been practicing in McPherson, has announced plans to move to Abilene to practice there.

A story about Dr. Ira I. Smith, who practiced in Atlanta for 41 years, was published in a recent issue of the *Winfield Courier*.

Appointed to serve as medical advisors to the newly organized Kansas Chapter of the National Multiple Sclerosis Society are the following: Dr. Harold H. Jones, Winfield; Dr. William E. Laaser and Dr. Donald R. Rose, Kansas City; Dr. Frank A. Moorhead, Neodesha; Dr. Rollin R. Nevitt, Fort Scott. Serving on the board of directors are Dr. Franklin D. Murphy, chancellor of the University of Kansas, and Dr. W. Clarke Wescoe, dean of the University of Kansas School of Medicine.

Dr. William W. Abrams, Kansas City, addressed the Wyandotte County Medical Assistants' Society at a recent meeting on the subject of "Medical Defense against the Hydrogen Bomb."

Dr. Edward C. Petterson, Plainville, has been named health officer of Rooks County to fill the vacancy caused by the death of Dr. F. E. Richmond.

Dr. Clemens Rucker, Sabetha, who has completed 50 years in the practice of medicine, was guest of honor at an open house at the Sabetha Congregational Church on March 27. The event was sponsored by the Nemaha County Medical Society and its auxiliary.

Dr. Thomas L. Foster, Halstead, led a panel discussion on adult mental disorders at a recent meeting of the Harvey County Mental Health Association.

Dr. Howard P. Fink, who has been practicing in Bucklin since 1949, has announced plans to begin a residency in pathology at the University of Kansas School of Medicine in July.

Dr. Earl F. Morris has resigned his position at the Larned State Hospital to accept the post of clinical director of the state hospital at Fort Supply, Oklahoma.

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Bumbalo, T. S., Gustina, F. J.,
and Oleksiak, R. E.:
J. Pediat. 44:386, 1954.

White, R. H. R., and
Standen, O. D.:
Brit. M. J. 2:755, 1953.

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Dr. Harry Lutz, Augusta, explained the program of administering polio vaccine to grade school children at a meeting of teachers in Greenwood County on March 31.

Dr. Paul B. Burger was recently released from service with the Air Force and will practice in association with his father, Dr. Julius A. Burger, in Kansas City.

Dr. Jack R. Cooper, Kansas City, is secretary of the newly organized Kansas City Society of Neurological Surgery.

Dr. J. Robert Twinem, Olathe, spoke on "Medical Aspects of Civil Defense" before the Olathe Parent-Teacher Association recently and on "Medical Aspects of Civil Defense with Emphasis on Nurses' Responsibility" before an organization of registered nurses of the area.

Dr. Charles Pokorny and Dr. Robert G. Rate, Halstead, were speakers at an institute on tuberculosis held by nurses in the Halstead area recently.

Dr. Charles H. Miller was recently honored in his home city, Parsons, by being named "Parsonian of the Week." Dr. R. W. Urie later received the same honor. Feature stories about the two were carried in the *Parsons Sun*.

Dr. Karl Menninger and Dr. Will Menninger, Topeka, received the Samuel J. Crumrine annual award at a meeting of the Kansas Public Health Association held at Lawrence on April 1. The award was given in recognition of their contribution to mental health in Kansas.

Dr. Geoffrey M. Martin, of the Kansas State Board of Health, served as discussion leader on "Crucial Developmental Aspects of the Pre-School Years" at the Southwest Regional Conference of the Child Welfare League of America in St. Louis, March 30.

Dr. Charles Campbell, who has been practicing in Phillipsburg, has moved to Chanute and is now practicing there in association with Dr. Henry K. Baker.

A feature story about Dr. Marlin S. McCreight was carried in a recent issue of the *Valley Falls Vin-dicator* in recognition of his 85th birthday.

Four Wichita physicians, Doctors Don Miller, J. Gilleran Kendrick, C. P. McCoy, and Harold Low,

recently addressed students in Wichita high schools on the subject of medicine as a vocation.

MORE STUDENTS STUDY NURSING

More students entered schools of professional and practical nursing in 1954 than in any year since World War II, according to John H. Hayes, chairman of the Committee on Careers, National League for Nursing.

Schools of professional nursing in the United States and territories admitted 44,930 new students, a 3.7 per cent increase over the 43,327 students admitted in 1953. The 26 schools in Kansas had 604 new students in 1953, 634 in 1954.

Although returns from schools of practical nursing are incomplete, reports indicate that admissions will show an increase. A tabulation of the first 239 returns gave admission of 10,012 students, while admissions for the previous year were 8,543.

The professional schools graduated 28,539 students last year; the reporting practical nursing schools graduated 5,616.

The number of professional nurses now working in the United States stands at 389,600. An additional 125,000 practical nurses are licensed. The demand for nurses, however, continues to exceed the supply of personnel. A goal of 50,000 new students for professional schools and 20,000 for practical nursing schools has been set for 1955 by the National League for Nursing.

Various health problems, which seem unrelated, actually are closely related. If the farmers in an area are all sick with malaria at harvest time, famine results. The lowered resistance of the starving population paves the way for more rapid spread of tuberculosis. Both malaria and tuberculosis result in lowered economic standards. Substandard housing and overcrowding follow and in turn contribute further to the development of tuberculosis. Extensive dental caries will result in malnutrition, which in turn may produce greater susceptibility to tuberculosis . . . the substandard living conditions resulting in part from such diseases cause discontent, frustration, and desperation—fertile soil for the growth of communism.—James E. Perkins, M.D., *NTA Bulletin*, September, 1954.

Among the items coming before the House of Delegates of the A.M.A. at its meeting in Miami last winter were 32 resolutions, each requiring individual action.

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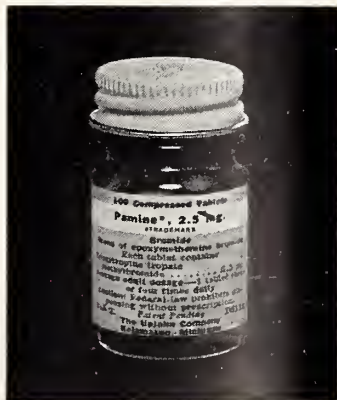
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THE KANSAS PRESS LOOKS AT MEDICINE

Editor's Note. In this section the JOURNAL reproduces editorials relating to medicine which have appeared in the lay press. An effort is made to include both favorable and unfavorable comments, and the Editorial Board in no instance assumes responsibility for the opinions expressed.

NEW COUNTRY DOCTORS

The old-time country doctor is rapidly disappearing from the American scene and from necessity—there aren't as many doctors as there used to be, or at least there aren't in this county where, until thirty to forty years ago, every town in the county, even the smaller ones, had one or more physicians. . . . The automobile moved the doctors to the larger cities and modern hospitals and clinics have kept them in areas like ours.

But we still have country doctors. How else would you label the men who take care of our health problems today? True, theirs is a different type of care. They use hospitals and clinics and their facilities

much more than their brothers of the previous generation or two. But physicians of an earlier day probably would have done the same, had such facilities been available.

It isn't that the modern doctor cannot diagnose without those facilities as his fellow practitioners of an earlier era did. But he has the laboratory, the x-ray and other methods of supporting his prognosis, and he uses them.

And so we salute the modern country doctor, who is carrying on in the best traditions of Hippocrates, greatest of the old Greek physicians and often called the "father of medical science." He used temples as hospitals and treated his patients for their ailments while they offered petitions to their heathen gods.—

Smith Center Pioneer, March 3, 1955.

FEDERAL HEALTH CARE

Another task force of the Hoover Commission on governmental reorganization has made its report. Its finding is that various federal agencies spent more than \$4 billion last year in providing complete or partial health and hospital care for 30 million Americans.

In the opinion of the researchers, too many persons are receiving more care than they actually require in present facilities which are much larger than

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patient load warrants. And the work of the various federal agencies operating in this field is so uncoordinated that among them they waste several hundreds of millions of dollars annually.

This, however, has now become an old familiar story. Each independent and objective study of government operations in specific areas disclosed duplication, confusion, and unnecessary activities, all of which could be eliminated with great savings. But usually, when it comes to action, Congress is less concerned with efficiency and economy than in the cries of those who would be disadvantageously affected by the reforms.

There is another aspect to this task force report which opens a second line of thought. These 30 millions, who constitute 3-16ths of the nation's population, are having as completely socialized medicine, in terms of payment, treatment and patient and physician relations, as they would under the British scheme. Add to these for whom the government has assumed health and hospital direct responsibility, the members of Blue Shield, Blue Cross, and private group health insurance, and the continuing argument over socialized medicine becomes to a considerable degree academic.

Whether it is desirable or not, socialized medicine

in this country is already one-third here.—*Hutchinson News-Herald, March 3, 1955.*

A NEW INSECTICIDE—DDVP

A new insecticide known as DDVP, discovered by research scientists at the laboratory of the Public Health Service's Communicable Disease Center at Savannah, Georgia, is reported by the U. S. Department of Health, Education, and Welfare as being more potent in killing insects and less toxic to humans and farm animals than most modern economic poisons.

The name is derived from the initials of the chemical name, dimethyl dichloro vinyl phosphate. The product will be most useful where flies and insects have developed a resistance to DDT. The two are of different chemical families. DDVP, unlike DDT, will not remain effective over long periods of time and for that reason is especially suitable on crops where insecticide residues are objectionable.

Twenty-five per cent of all drivers involved in fatal auto accidents in the United States last year were under 25 years old.

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Report of an Epidemic of Infectious Mononucleosis in a Small College Town

James H. Scanlon, Jr., M.D.

Kansas City, Kansas

The following are some observations made on 46 cases of infectious mononucleosis in Baldwin, the home of Baker University, during the spring of 1953. Diagnoses were made on the basis of (1) clinical findings, (2) presence of atypical lymphocytes, and (3) heterophile antibody titer.

Twenty-four of the patients diagnosed fulfilled all three of these criteria. The remaining 22 demonstrated atypical lymphocytes along with the physical

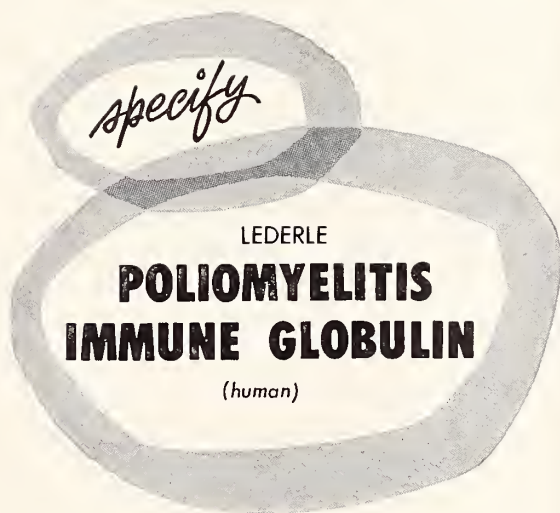
findings. Nine of these 22 so diagnosed eventually developed a positive heterophile antibody titer, but in some instances it was as late as four to six weeks after diagnosis had been established on the basis of physical findings and demonstration of atypical lymphocytes in the peripheral blood. The other 13 patients did not show a positive heterophile antibody titer at any time, even though two to three different heterophile agglutination studies were done.

Patients' ages ranged from 17 to 28 years. Twenty-four were females, 22 males. Three patients were of the Asiatic race, the rest white. All except three patients were students at Baker University.

These cases seemed to be epidemic in occurrence as the diagnoses were made in a six to eight weeks'

This is one of 11 theses, written by fourth year students at the University of Kansas School of Medicine, selected for publication by the Editorial Board from a group judged to be the best by the faculty at the school. This thesis won the \$100 Phi Chi prize last May for the best paper written by a fourth year student.

Dr. Scanlon is now interning at St. Margaret's Hospital, Kansas City, Kansas.



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period on approximately 10 per cent of the student body.

A study of housing with a view towards possible demonstration of contagiousness showed the distribution outlined in Table I.

TABLE I

House	No. of cases	No. of residents	House	No. of cases	No. of residents
A	3	34	G	4	38
B	2	43	H	2	13
C	3	21	I	2	5
D	2	17	J	3	25
E	3	22	K	3	24
F	4	22	L	2	29
In private homes			4		
Living at home			6		
Non-students			3		

Since there were no infirmary facilities, patients were advised to return to their homes, but only one of such advised patients left the campus. The rest stayed to convalesce in their respective dormitory, sorority, or fraternity houses.

CLINICAL OBSERVATIONS

There was considerable overlapping of symptoms and signs. The prominent symptoms and signs are shown in Table II.

TABLE II

SYMPTOMS			
Sore Throat	40	Stiff Neck	7
Malaise or weakness	23	Abdominal pain	4
Cold	20	Chest pain	3
Headache	19	Cough	1
Chilling	9	Joint pain or swollen joints	3
SIGNS			
Temperature range	98°-104°	Injected throat	42
above normal	24	nose	19
normal	12	ears	8
below normal	10	Stomatitis	10
Lymphadenopathy	42	Muscle tenderness	6
cervical	36	Abdominal tenderness	5
axillary	15	Splenomegaly with	
inguinal	8	tenderness	3
Skin Eruptions	5	Hepatomegaly with	
Râles	1	tenderness	2

Systemically, pharyngitis was by far the most common complaint. The pharyngitis was in most instances of a characteristic type. The mucosa was of a salmon-red color and of a diffuse nature. On one visit the patient would complain of his throat being extremely "sore" while at a succeeding visit he would state that it was not "sore" but "just irritated," although no decrease in the intensity of the pharyngitis could be observed. This pattern was observed throughout the course of the disease. The pharyngitis was in every case associated with malaise or weakness.

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Patients complained of abdominal pain and chest pain in only a few cases. Headache was a common complaint. Because of enlarged cervical lymph nodes, a few complained of "stiff neck." Several complained of painful and swollen joints.

Temperatures ranged from 98°-104° with over 50 per cent exhibiting fever. A few patients ran slightly sub-normal temperatures. A few others remained afebrile throughout the course of the disease. Many cases in the initial state showed high temperatures for three to five days, some decreasing rapidly in 48 hours to a low grade temperature, while others decreased in a more gradual rate to a low grade fever (100°±) which persisted throughout the course of the disease. Many cases also showed intermittent fever and remittent fevers.

Lymphadenopathy was almost a constant finding. Cervical lymph nodes were tender, discrete, and movable. A fair percentage presented a generalized lymphadenopathy including epitrochlear nodes. In some cases only axillary and inguinal nodes were palpable. Almost all showed pharyngitis with two presenting definite and heavy membranes. Rhinitis was found in about half, and a few demonstrated injection of the ear drums. A few complained of aching muscles which were tender on palpation. Splenomegaly with tenderness and hepatomegaly with tenderness were exhibited in rare cases. In no case was icterus demonstrated.

A few cases presented urticarial-like lesions which were pruritic. These were distributed for the most part on the shoulders, arms, and legs. In only one case were râles suggesting pneumonitis heard in the chest.

It is apparent from the protean manifestations of the disease that the clinician could be led down many misleading pathways if he were not constantly aware of the disease and its variability of symptomatology.

LABORATORY FINDINGS

The clinician must rely heavily on laboratory tests for his final diagnosis of infectious mononucleosis because of its varied nature. Findings as a result of laboratory testing in this series are included in Table III.

Atypical lymphocytes were present in peripheral blood smears of all patients. A large percentage of cases did not show lymphocytosis, and a small portion of the cases that did not present lymphocytosis presented a relatively small number of atypical lymphocytes. Some cases showed increased numbers during the course of the disease, others showed no increase. Occasional cases of leucopenia were found which either persisted as such or at no time rose

TABLE III

LABORATORY DATA			
Leukopenia	4 patients	2,500-5,000	cells
Normal	23	5,000-10,000	
Leukocytosis	19	10,000-23,000	
	13	10,000-15,000	
	4	15,000-20,000	
	2	20,000-23,000	
Lymphocytes	18	25-50%	
	17	50-75%	
	11	75-above	
Atypical lymphs	19	5-10%	
	9	10-15	
	6	15-20	
	3	20-40	
	9	40-60	
Heterophile antibody	8	0	
titer (Davidsohn)	1	1:7	
	2	1:14	
	2	1:28	
	6	1:56	
	7	1:112	
	5	1:224	
	5	1:448	
	4	1:896	
	2	1:1792	
	4	1:3584	
Pyuria	3		
Throat Smears	10		
	10		
	6		
		fusiforms	
		with spirochetes	

above normal range; however, these presented atypical lymphocytes and developed positive heterophile antibody titers.

Pyuria was found in three cases, and whether this was concurrent or a superimposed infection is not understood. Attempts at identification of possible etiological bacterial organisms were not feasible because of lack of facilities.

Ten cases of stomatitis on oral and pharyngeal smears demonstrated fusiform bacilli. In six of these the spirochete was found with the fusiform bacillus. Other organisms found on these smears were quite commonly gram-negative diplococci. Again, facilities did not permit culture or further investigation.

TREATMENT

Thirteen patients were treated with penicillin and 18 with aureomycin, while 15 patients received supportive treatment and were used as a control group. The dosage of penicillin was 400,000 units of procaine G penicillin given intramuscularly every other day. Those patients receiving aureomycin were given 250 mgms. orally every six hours. Duration of therapy varied from one week to three months.

Drug	No. of patients	Symptom decrease average days
Penicillin	13	7.1
Aureomycin	18	7.9
Neither	15	6.7

Patients receiving antibiotics were those who demonstrated the more severe upper respiratory symptoms, as a general rule.

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In addition to antibiotics, supportive therapy was given, such as aspirin, phenacetin and caffeine, acetylsalicylic acid and Coricidin for "cold" symptoms. Saline and acetylsalicylic acid gargles were advised for throat symptoms. In the more severe cases of pharyngitis and in cases of Vincent's angina, penicillin was given. Hydrogen peroxide mouth washes were also used in cases of Vincent's angina. All were advised to force fluids and rest.

On comparing these three groups receiving different therapy, with allowances being made for intensity of infection, no significant difference was observed.

DISCUSSION

There has been a tendency of late for authors on infectious mononucleosis to report the disease as non-epidemic.^{1, 2, 3} It is hard to appreciate this point on the basis of finding 10 per cent of a student body with known infectious mononucleosis, knowing by communication with housemothers and with many unofficially that others had the same symptoms but did not present themselves to the college physician for diagnosis or treatment. Only three cases occurred in the town in persons who were not members of the student body, but these three had direct contact with students through their employment by the college.

The fact that infirmary facilities were not available for isolation of known cases may have been a big factor in transmission or epidemic-like proportions of the disease. However, as shown by Table I, known cases were distributed rather equally throughout the various dormitories of the college, which distracts from their epidemic view.

Because many patients presented themselves with severe pharyngitis, and because many of these demonstrated fusiform bacilli and spirochetes on oral smears, they were given penicillin; first, because it is the drug of choice with spirochetal infections; second, to observe whether penicillin had any effect on the severity and duration of the disease; and third, as a prophylactic to prevent complications.

Another group was treated with aureomycin because of recent reports in the literature that aureomycin had been effective therapeutically in treatment of infectious mononucleosis.^{4, 5, 6} This group included those who demonstrated pyuria and the one patient in whom râles were heard in the chest.

A third group was used as a control group. These patients received only supportive therapy such as saline gargles, acetylsalicylic acid, Coricidin, rest, and fluids.

Lymphocytosis occurring at some time during the disease is a diagnostic point; however, this was



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found only in the more severe cases and not in milder cases. Atypical lymphocytes were present in all these patients, varying from 5 per cent to 60 per cent of the lymphocytic count. The criteria used for distinguishing these atypical forms were those proposed by Downey⁷ which are: Type I characterized by heavy-staining, irregular or bean-shaped nuclei, without nucleoli, and with dark blue, foamy cytoplasm; Type II characterized by relatively large amounts of light blue cytoplasm and a relatively normal-appearing, eccentrically placed nucleus; or Type III distinguished by its resemblance to malignant or leukemic cells.

Blood specimens for heterophile antibody titer studies were sent to the Public Health Laboratory of the Kansas State Board of Health at Topeka. At this laboratory the Davidsohn presumptive test for infectious mononucleosis is used. The present series demonstrated 33 cases with a positive heterophile antibody titer varying from 1:56 to 1:3584. Several of these did not develop an antibody titer until later in the course of the disease, and 13 did not develop a positive titer at any time during the disease. In spite of this, diagnoses were made on (1) clinical findings, and (2) the presence of a lymphocytosis with atypical forms or the finding of atypical forms without lymphocytosis.

The present series showed the disease to be self-limited, most symptoms disappearing within three weeks. However, two resistant cases were found, one lasting three months, the other six months. One patient relapsed two weeks after symptoms had completely subsided. The recurrence was associated with Vincent's angina. One patient gave a history of having had infectious mononucleosis five months previously, while three gave histories of infection one year previously.

SUMMARY

Clinical and laboratory findings and therapeutic results have been presented on an "epidemic" of infectious mononucleosis in approximately 10 per cent of a college student body within a six- to eight-week period.

Lymphadenopathy and pharyngitis were manifestations which were nearly constant within a great variability of other signs and symptoms.

Atypical lymphocytes were present in varying numbers in all patients. Not all showed lymphocytosis. Some showed a leucopenia; in some cases it remained so throughout the course of the infection, and in others it rose gradually to within normal limits.

In cases of stomatitis the fusiform bacillus was present in all (10) smears, and it combined with the spirochete in six of these.

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Thirteen of the patients were treated with penicillin and 18 with aureomycin. In comparison with the 15 who received neither, no significant difference was observed in alleviation of symptoms or duration of the disease.

Three of the patients had pyuria. It was assumed that this was a concurrent infection.

CONCLUSIONS

On the basis of the treatment of these cases, no advantage is gained with the use of penicillin or aureomycin in direct treatment of the disease. The only rationale in its use could be as a prophylaxis against complications.

The incidence of the fusiform bacillus and spirochete in a large number of the cases found on oral smears might be a helpful diagnostic sign to the practitioner when found in combination with other symptoms and signs.

It was found that the more dependable confirmatory laboratory procedure for the practitioner, and the test that will give him earlier results, is the finding of lymphocytosis or atypical lymphocytes in the peripheral blood as compared to the heterophile antibody titer.

ACKNOWLEDGEMENT

I wish to express my appreciation to Dr. V. H. Hildyard, formerly of Baldwin, Kansas, and now of Minneapolis, Minnesota, for his advice and laboratory facilities in the preparation of this paper.

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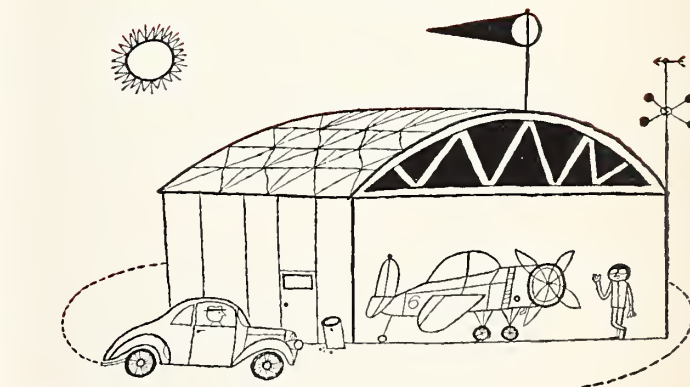
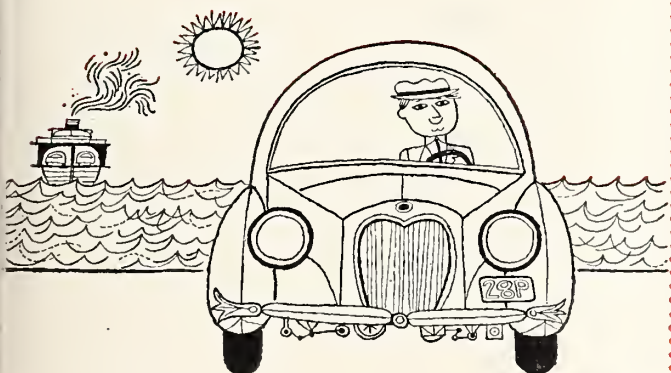
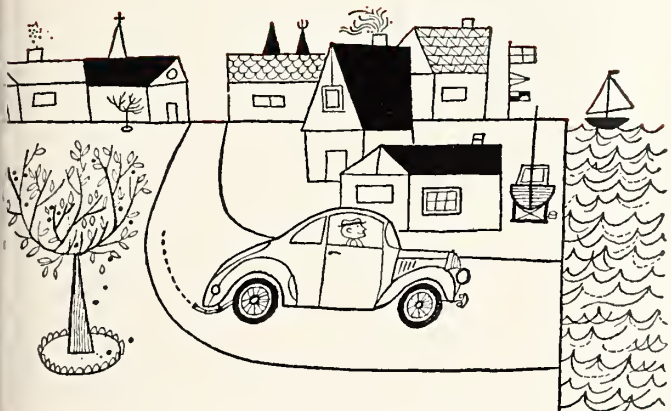
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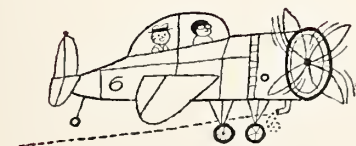


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The American Proctologic Society will hold its 54th annual meeting at the Hotel Statler, New York City, June 1-4. All sessions are open to members of the medical profession.

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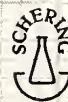
The Bureau reports that more than five per cent of all babies born in the United States arrive prematurely.

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Chronic Volvulus of the Cecum and Ascending Colon as a Clinical Syndrome

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Volvulus of the cecum and ascending colon with complete obstruction has received considerable attention by many authors. This complete volvulus is said to account for approximately one per cent of the total number of cases of intestinal obstruction. It was approximately 50 years ago that Corner and Sargent³ first discussed a chronic type of volvulus with intermittent symptoms. Sweet¹¹ 30 years later, in an excellent report, again covered this phase of chronic obstruction with a case report.

It is the purpose of this paper to cover a recent group of these partially volvulated cases and demonstrate, as to their etiology, a fairly consistent pattern of symptoms and anatomical findings.

Most modern authors agree that the congenital defect found as the etiology of a partial or complete volvulus of the cecum and ascending colon is a failure of complete rotation and fixation of the cecum in the right iliac fossa, thus a mobile cecum and ascending colon. It has been estimated by necropsy examination that approximately 15 per cent of all individuals have some degree of motility to the cecum.

The cecal transgression is a process of rotation in a counter clockwise direction from the left lower quadrant to a phase of descent from the sub-hepatic area to final fixation to the posterior abdominal wall. This process may be halted at any degree of counter clockwise rotation. It is this failure of fixation that a pseudo mesocolon, as described by Jackson, develops. Actually this is not a mesocolon at all, as it is

an avascular membrane arising from the lateral peritoneal wall which crosses the anterior surface of the ascending colon below the hepatic flexure, covering the proximal ascending colon, cecum, and terminal ileum.

The cecum and surrounding structures are suspended in this membranous sac, rotating in a clockwise manner with the tight tourniquet membranous band acting as a fulcrum where it crosses over the colon below the hepatic flexure. Undoubtedly, either the tight membranous band across the colon or torsion of the cecum may give independent symptoms of chronic obstruction.

Barium studies are of little help in diagnosis of the non-obstructed case. However, they will demonstrate a mobile cecum. In the case of Sweet,¹¹ a tight Jackson's membrane was noted across the ascending colon. If torsion is complete enough, a distended cecum may be noted or the cecum may be abnormally disposed in the abdominal cavity, usually elevated and to the left.

The predominant clinical symptom of chronic volvulus is pain in the right lower quadrant. This pain develops suddenly and is quite severe, usually associated with mild nausea and occasional vomiting. The onset of this severe pain usually follows a heavy meal, strenuous exercise, or riding in an automobile, and it is aggravated by standing. Relief is obtained by lying down, massaging the abdomen, or repeated enemas. Constipation has not been a consistent symptom in this group of cases.

Upon physical examination, pain is elicited over McBurney's area with little, if any, rigidity. In thin individuals, one is often able to feel a sausage-like tender movable mass in the right lower quadrant. As one sometimes manually palpates this mass, gas can be felt to suddenly move along the ascending colon. The patient will then state that the pain has subsided and that he feels better. The white blood count is normal except when obstruction is more severe or prolonged and strangulation of the tissues is in progress; then there is a rise commensurate with the degree of inflammation present.

Upon surgical exploration, these typical anatomical findings are usually present: (1) a long, pendulous, mobile cecum, ascending colon, appendix, and terminal ileum that may be delivered well out of the abdominal cavity; (2) a long, hypertrophic, complete or partially retrocecal appendix, which may or may not show evidence of past inflammation; (3) the terminal ileum which is hypertrophic but not inflamed as in a terminal ileitis (because of the tendency to clockwise rotation, the ileocecal valve seems to be on the right side of the cecum); (4) the whole pendulous mass containing the lower ascending colon, cecum, appendix, and terminal ileum is encapsulated in an avascular membrane, as described by Jackson years ago. This avascular sac-like membrane arises from the lateral peritoneal fold and crosses anterior to the colon in the form of a snug tourniquet-like band, continuing down to envelop the cecum anteriorly and posteriorly.

Rotation of the cecum may be of any degree. However, it is usually felt that a torsion of 180 degrees must be present before symptoms arise. When rotation is complete, we are dealing with a closed loop obstruction with resultant gangrene and perforation. In the past two years, my associate, Dr. E. S. Edgerton, and I have operated upon three patients with gangrene and perforation, all three cases requiring extensive resections of the colon and terminal ileum. One patient died, making a mortality rate of 33 1/3 per cent.

The surgical procedure in chronic volvulus need not be extensive. Simply dividing the Jackson's membrane where it crosses the ascending colon, freeing the cecum and terminal ileum, "unwinding" what cecal torsion is present, and anchoring the cecum to the posterior wall with a few interrupted sutures, are all that is necessary. However, if adequate mobilization and release of the obstructive membrane are not accomplished, further intermittent rotation with partial obstruction will continue. The removal of a retrocecal appendix may be adequate. However, as in one of these case reports, the patient may return with "that same pain, Doctor."

During the past year careful attention has been

given to those people who were seen because of pain in the right side that seemed to fit into the clinical syndrome previously described. All of the following persons had definite indications for exploration, some with acute appendicitis associated with this congenital defect found at operation. Symptoms, however, could be chiefly attributed to a mechanical type obstruction of the ascending colon and cecum.

CASE 1

M.L.Y., a married, 33-year-old white female, was sent into the office because of an evasive mass in the right lower quadrant. Previous white blood count, intravenous pyelogram, and barium enema had all been essentially negative, other than a roentgen diagnosis of a mobile cecum. This patient gave the typical history of many occasions of sudden onset of severe pain in the right lower quadrant which seemed to double her over, and nausea was present at this time. Relief was obtained by lying down or, if pain continued, by taking an enema. She also stated that she could feel a "lump" in her right lower abdomen when these attacks were present. Attacks had been attributed to simple indigestion and gas. No history of constipation and no rectal bleeding were present.

On physical examination, a sausage type movable mass could be felt through a thin abdominal wall. This mass was tender; however, upon palpation, gas could be felt to pass along the colon, and the patient ceased to complain of pain. Other than this finding, physical examination was essentially negative.

At surgical exploration, through a right rectus incision, a pendulous, sacculated ascending colon, cecum and terminal ileum were found. This mobile cecum was delivered well out of the abdomen and was found to contain fecal material. The cecum and terminal ileum were also rotated clockwise almost 180 degrees. The appendix was elongated and retrocecal. The terminal four inches of the ileum were encapsulated in this membrane and quite hypertrophic. The heavy Jackson's membrane arose from the lateral peritoneal fold and passed anterior to the colon just below the hepatic flexure in a tourniquet fashion. The cecum and colon thus rotated around this obstructive band as a fulcrum. Rotation was not sufficient to cause complete obstruction or devitalization of tissue.

The surgical procedure consisted of severing this Jackson's membrane completely to its origin below and lateral to the hepatic flexure. The appendix was removed and the cecum was literally uncoiled. The cecum was then anchored to the posterior wall by a few interrupted chromic sutures. The patient has been free of symptoms since her surgery.

CASE 2

H.E.M., a 28-year-old white housewife, was three days post partum. While taking a shower she bent down for a piece of soap and suddenly developed a severe constant pain in the right lower quadrant that required a hypo for relief. Her temperature was normal, but the white blood count was elevated to 18,500, which was thought to be a fairly normal post partum count. The pain subsided somewhat in a few hours, but she still remained tender and the abdomen was thought to be somewhat rigid. Nausea was quite severe and she vomited once. Because of continued pain and tenderness, the patient was operated upon.

A volvulated, mobile, incompletely obstructed right colon was found. The entire cecum and terminal ileum were hyperemic. A clockwise torsion was present, occurring at the site of crossing of the heavy Jackson's membrane below the hepatic flexure. The appendix was retrocecal. Surgical procedure consisted of freeing the Jackson's membrane at point of origin, removing the appendix, and suturing the cecum to the posterior wall. Recovery was uneventful.

This case of volvulus was precipitated first by delivery, then a sudden change of position, and the congenital pre-existing defect of attachment of the right colon. This patient stated that she had always had stomach trouble, but was told she had a spastic colon.

CASE 3

A.W., a 24-year-old white female, was admitted to the hospital because of severe pain in the lower right abdomen for the past three hours. She gave a history of similar symptoms previously but never so severe. Her pain had subsided somewhat by the time of admission. White blood count was 12,300. On physical examination, a definite sausage-like, tender mass could be felt in the right lower quadrant. Upon exploration a partially volvulated cecum and terminal ileum were found, also a retrocecal appendix. Surgical procedure was carried out as in previous cases. Recovery has been excellent.

CASE 4

R.E.H., a 27-year-old male transcontinental transport driver, who was a brother of the previous patient, had such a severe right abdominal pain while driving near Albuquerque, New Mexico, that he had to leave his truck. He gave a long history of having pain at intervals, especially after eating, and he would stop his truck and lie down for a while, thus getting relief. On physical examination, he had definite tenderness over the cecal area. White blood count was somewhat elevated. On exploration, we found a partial volvulus was present, with definite

hypertrophy of the terminal ileum, indicative of long standing partial obstruction of the ascending colon at the site of transgression of the Jackson's membrane. A large, long, retrocecal appendix was present, as was expected.

CASE 5

S.N.J., a 10-year-old school girl, was admitted with the diagnosis of an acute appendicitis. She gave a long history of abdominal pain in the appendiceal area. At exploration, this girl was found to have purulent, retrocecal appendicitis; however, there was also present a heavy Jackson's membrane with a pendulous, rotated cecum and terminal ileum. The cecum was freed and rotation corrected. Recovery was uneventful, and this child has had no further abdominal distress since surgery. It seems unlikely that the appendix was the source of pain and distress over several years.

CASE 6

R.T.P., 35-year-old wife of a dentist, had a long history of abdominal pain. In recent years, she had been hospitalized twice because of pain in abdominal right side, always with negative studies. Three different physicians had seen this patient with about as many different diagnoses such as spastic colon, interval appendicitis, and just plain neurosis. However, on her last episode of abdominal pain, a sausage-like painful cecum could be felt, and exploration was deemed advisable. The surgical finding of partial volvulus as in the other cases was present. Surgical procedure was the same. It may be added that this patient has had no abdominal symptoms since surgery.

CASE 7

D.L.M., a 27-year-old white female, was operated upon for acute appendicitis. Her pain had been quite severe with a moderate elevation of white blood count. No previous history of abdominal pain was given. Upon exploration a moderate clockwise volvulus was found, associated with a normal retrocecal appendix and a heavy Jackson's membrane. Recovery was uneventful.

CASE 8

G.R.H., a 34-year-old white bachelor, was seen at the request of another physician. This man had had a previous appendectomy six years before because of intermittent pain. Since that time, he had continued to have similar pain, aggravated by eating heavy meals. A long history of constipation was given. He had been hospitalized with complete work up on two separate occasions with essentially negative findings. As a result, he had been on several diets and various antispasmodic preparations. Because of ten-

derness and pain in the area of the old appendectomy scar, it was felt he might have an obstructive adhesion and, at the patient's request, he was explored. A heavy Jackson's membrane was found as described as well as rotation with torsion of the cecum and terminal ileum. This man has been relatively free from abdominal pain but is still constipated.

CASE 9

V.N.C., a 33-year-old white female, was admitted to the hospital by another physician because of severe right abdominal pain. Because the pain subsided and white blood count was normal, the patient was dismissed. She stated that she had been hospitalized under similar conditions once before. She remained at home four days, and was free of pain until she took a car ride after dinner. Her pain was so severe that she was admitted to the hospital again. White blood count was normal and she had relief from symptoms by morning. However, on physical examination, a mobile, tender cecum could be felt. It was stated, in front of the patient, that she probably had a retrocecal appendix, and she quickly replied that her father had had such an appendix and his was covered by a membrane. The story would not be complete unless one said that she also had the same findings of the typical Jackson's membrane with a clockwise volvulus. This patient had an uneventful recovery and, to date, has been free of pain.

CASE 10

M.L.R., a 32-year-old white female, was operated upon because of a sudden attack of severe abdominal pain. The white blood count was elevated, and a tender movable mass could be felt in the right lower quadrant. Exploration revealed a pendulous sacculated cecum and hypertrophic terminal ileum as well as the heavy tourniquet band across the ascending colon. The patient's recovery was uneventful. This patient gave a history of previous abdominal distress of no serious nature.

DISCUSSION

Report of these few selected cases is in no way meant to cover the multiple neurotic patients with vague abdominal pain that most doctors see. However, there is a group that will be greatly relieved by surgical intervention. How many of these chronic cases would go ahead to complete volvulus, one does not know. Ingelfinger⁷ stated that of 81 patients studied, 47 per cent exhibited chronic symptoms before acute onset. Undoubtedly, many of the cases classed as chronic appendicitis fall into this group.

SUMMARY

1. Ten cases of partial intermittent volvulus of the cecum and ascending colon with clinical symptoms and surgical findings are presented.
2. The congenital anatomical defect of lack of fixation of the cecum to the right posterior abdominal wall and its relationship to a Jackson's membrane as an etiological agent are discussed.
3. The importance of complete severance of the tight Jackson's membrane where it crosses the anterior portion of the ascending colon and complete release of the cecum is emphasized.

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Leisure implies life. We talk of a machine being idle, but not of a machine at leisure, and therein perhaps lies the key to the meaning and importance of leisure. I have a body and a brain, and they are still in reasonable working order, whilst the motor cars that started at the same time are on the scrap heap. The essential property of living things is that they find their own fuel and do their own repairs; but as every part is in need of periodic rest and overhaul, every part must be given time off from activity.

—Sir Heneage Ogilvie

Clinical Characteristics of Esophageal Hiatal Hernia

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Diaphragmatic hernia has been a recognized anatomical finding since first described by Pare in 1775.¹³ In 1769 Morgagni described the history and symptoms in a patient with a traumatic diaphragmatic hernia and established the condition as a clinical entity.⁹

Most discussions and case reports in the literature until the past 25 years concerned themselves with large, fixed hernias, many of them traumatic, the type found at autopsy. More recently the emphasis has been on the esophageal hiatal hernia that is small and tends to slide in and out of position.

Diaphragmatic hernia may occur through several different routes:⁴

1. Through the domes or leaves of the diaphragm due to traumatic rupture;
2. Through the esophageal hiatus;
3. Through the hiatus pleuroperitonealis;
4. Through the foramen of Morgagni (substernal);
5. Through the posterior side of the left diaphragm due to congenital absence of that part.

The first two make up over 90 per cent of the cases found in adults, and esophageal hiatal hernia makes up over 75 per cent of all cases in all age groups.

Esophageal hiatal hernias are the most common form and produce the usually acceptable clinical picture. They have been anatomically classified (Figure 1) into three types according to their relationship to the esophagus.^{14, 15, 17}

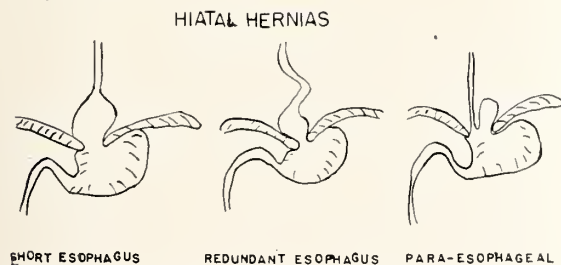


Figure 1. The anatomical relationship of hiatal hernias to the esophagus.

The short esophagus was originally thought to be a congenital defect,⁶ but this defect is known in

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some cases to correct itself by gentle traction; by x-ray it has been seen to drop back to normal length after large doses of antispasmodic drugs.

The redundant esophagus makes up the most cases. Simmons¹⁶ and others give the following percentages: redundant esophagus 67 per cent; short esophagus 26 per cent; para-esophagus 7.5 per cent. Their series consisted of 25 cases.

The symptoms of this condition have been many and somewhat vague. The most common are gas, bloating, epigastric distress, emesis, and trouble in swallowing.^{1, 3, 8, 14, 15} These, however, may represent almost any condition in the gastrointestinal tract. Likewise many cardiac diseases have substernal or epigastric pain associated with gas and bloating as their most serious complaint.

Thirty-six cases of esophageal hiatal hernia were studied at the Hertzler Clinic in an attempt to determine their characteristic clinical picture. These have all been seen since 1950.

This condition has been thought to be more prevalent in women. In our series this was so, and these women were obese.

TABLE 1
WEIGHT AND SEX

	Weight	Male	Female
Under	130	0	1
	130-	0	5
	140-	1	5
	150-	1	5
	160-	1	2
	170-	1	4
	180-	0	3
	190-	0	2
	200-	2	0
Weight not reported		—	3
		6	30

Table 1 shows that we have 6 (16 per cent) men, and 30 (84 per cent) women. Eleven (36 per cent) of the women weighed over 150 pounds, and 2 (33⅓ per cent) of the men weighed over 200 pounds and could be presumed to be overweight.

Congenital types of esophageal hernia are reported and found in children. However, in most series, the patients who are studied for this condition are in the middle and later decades of life.

Table 2 shows that 26 (72 per cent) of our cases fell in the decades between 50 and 70. However, only 15 (41 per cent) were below 60 years of age, a

TABLE 2
AGE AND SEX

Age	Male	Female
40-	0	2
50-	3	10
60-	2	11
70-	0	7
80-	1	0
	6	30

factor in deciding whether to advise medical or surgical care. No cases were found younger than 40 years of age.

The location of the pain has been considered important in establishing a diagnosis. Jones⁸ reported that 39 of 78 cases (50 per cent) had substernal pain while 31 (39 per cent) had epigastric pain. He also reported the pain frequently radiated to the arms, shoulder, and neck.

Harrington,⁵ Doak,² Nuzum,¹¹ and Fitzgibbons³ comment on the epigastric substernal location and its similarity to the location of pain in coronary occlusion.

TABLE 3
HIATAL HERNIA PAIN

	Burning	Other
Epigastric	12	13
Substernal	10	9
Arms		5
Shoulders		3
Neck		2
Back and side		4

Table 3 shows the character and location of pain in our cases. It is obvious that the total number of points of pain exceeds the number of patients. This means that many patients felt pain in more than one location.

Twelve patients complained of both substernal and epigastric pain. However, the character of the pain was the same in both locations.

Substernal burning pain is most characteristic and typical of this condition. When this is present, the diagnosis can frequently be made from the history; and regardless of other symptomatology, hiatal hernia should be suspected. However, usually fewer than one-half the cases show this; in our series there were 10 out of 36 patients who did. In the other cases the words "knife-like," "crushing," "cramping," "aching," were frequently used to describe the character of the pain. It frequently mimicked the pain of cardiac disease and other conditions in the gastrointestinal tract.

Symptoms of difficulty in swallowing,^{1, 6, 10, 15} vomiting, gas, and bloating,^{1, 5, 7, 8, 14, 16} and dyspnea⁷ have been frequently associated with hiatal hernia.

Table 4 shows that the subjective complaint of gas and bloating was present in 27 of our cases; although the most persistent symptom, it is hardly

TABLE 4
SIGNS AND SYMPTOMS

Gas and bloating	27
Emesis	11
Trouble in swallowing	10
Dyspnea	13
Melena	0
Hematemesis	0

diagnostic because of its frequency in other conditions. Vomiting was present in 11 cases, but there is nothing in the character of the vomiting that aids in diagnosis. Thirteen patients complained of shortness of breath. Six of these 13 patients had emphysema or heart disease, but it is doubtful that cardiorespiratory disease could have been the cause of dyspnea in more than four of these. This leaves 9 patients who had dyspnea without other obvious causes than their hiatal hernia. This symptom is reported in other series.⁸ The cause has not been explained, but the size of hernias cannot explain this on a space-occupying basis; it is probably due to some neurogenic reflex. Nevertheless, dyspnea without anemia or cardiorespiratory disease is a sign that may suggest esophageal hiatal hernia.

Isolated cases of massive hemorrhage^{1, 3} from excoriations in hiatal hernia have been reported. Several published series of hiatal hernia mention a high incidence of occult⁸ blood in the feces of patients. This has given the impression that bleeding is a frequent and serious complication. None of our patients reported vomiting blood or coffee ground material or the passage of melanic stools when specifically asked. Also only three of our patients had admission hemoglobin below 72 per cent or 12 gm. Two of these had gross bleeding from the rectum, one from hemorrhoids and the other from extensive obstructive diverticulitis. The third had gross hematuria from a carcinoma of the bladder.

It appears that when there is a profound drop in hemoglobin, when gross hematemesis or melena is present, other causes than hiatal hernia should be suspected and diagnostic procedures should not be stopped when a hiatal hernia is found.

This review of signs and symptoms indicates that there is no clear picture of hiatal hernia.

The characteristic clinical picture would be an overweight female over 50 years of age complaining after meals of burning substernal or epigastric pain made worse when she lies down, and who sometimes vomits and is short of breath.^{3, 15}

When this picture presents itself, suspicion should be aroused and the diagnosis can be made without difficulty. Burning pain, either epigastric or substernal, appears in only 60 per cent of cases, and the other common symptoms are more apt to suggest some other pathological process.^{1, 4} This causes the diagnosis to be missed on many patients. Esophageal hiatal hernia has been called the masquerader of the

upper abdomen.⁶ This was true in our series, as Table 5 shows the previous diagnosis used to explain the symptoms.

TABLE 5
PREVIOUS DIAGNOSES

Hiatal hernia	5
Heart disease	4
Colon disease	3
Female disease	2
Duodenal ulcer	2
Carcinoma stomach	1
Cardiospasm	1
Bursitis	1
Ventral hernia	1

It should be noted that heart disease was more frequently suspected than gastrointestinal disease.

Another confusing factor in the diagnosis of esophageal hiatal hernia is that in the age group most commonly seen with this condition, other diseases are present.

TABLE 6
OTHER DISEASES FOUND

Heart disease	13	Emphysema	1
Carcinoma	3	Cereb. Vas. Acc.	2
Bursitis	2	Psychoneurosis	1
Hemorrhoid	3	Prostatic ob.	1
Hypothyroidism	1	Arthritis	2
Renal lith.	1	Cirrhosis	1
Other hernias	2	Peptic ulcer	2
Gallbladder disease	8	Achlorhydria	1
Diverticulosis	13	Saint's syndr.	2

As can be seen in Table 6, heart disease and gallbladder disease, two diseases which frequently have epigastric and substernal distress following meals, are found in 21 of 36 cases.

Several writers have commented on the frequency with which gallbladder disease and diverticulosis are found with hiatal hernia. Finally Muller¹⁰ in Johannesburg, South Africa, suggested for gallbladder disease, diverticulosis of the colon, and esophageal hiatal hernia, the name of Saint's syndrome. He named this triad after his former professor of medicine.

Several groups have rushed to report new cases of this new disease. Dr. Eddy Palmer¹² at Walter Reed reviewed their cases of hiatal hernia. He found that diverticulosis and gallbladder disease were common, but not necessarily more so than would be expected in other people of this age group suffering from at least one degenerative disease of the intestinal tract.

I believe our figures also confirm this opinion. We had 8 cases of gallbladder disease and 13 cases of diverticulosis in our series, but only 2 occurred in the same person, hence only 2 cases of "Saint's syndrome."

The treatment of hiatal hernia is first medical and then surgical for complication or medical failure. Medical treatment^{1, 16} consists of:

1. Bland diet;
2. Antacids;
3. Antispasmodics.

Sometimes small frequent feedings are necessary. Rest in a non-reclining position following meals is sometimes helpful. Medical management is only symptomatic but offers control of symptoms and complications in a majority of cases. Surgery to avoid future complications is justified only in the younger, good surgical risk patient. Indications for surgery are:^{8, 11}

1. Persistent symptoms in a good surgical risk patient, usually under 55 years of age;
2. Excessive bleeding;
3. Strangulation;
4. Esophageal obstruction.

There are available several surgical procedures which have been satisfactory in each type, including the short esophagus hernia.^{1, 5, 7}

SUMMARY

1. Thirty-six cases of hiatal hernia have been reviewed in regard to their presenting signs and symptoms.

2. The typical picture of esophageal hernia has been presented, and it is emphasized that this occurs in fewer than 50 per cent of cases.

3. The infrequency of severe bleeding has been shown.

4. The frequency with which other diseases may be both present and confused with hiatal hernia has been stressed.

5. A review of therapy has been presented.

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Histoplasmosis

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HISTORY

In 1905, Samuel T. Darling,^{1, 2, 3} a physician working in the Panama Canal Zone, encountered a case characterized by splenomegaly, irregular pyrexia, leukopenia, anemia, emaciation, and chronicity. Autopsy of the patient by Darling revealed that the important pathological features were: "The invasion of endothelial cells in the smaller lymph and blood vessels and capillaries by enormous numbers of a small encapsulated microorganism causing necrosis of the liver with cirrhosis, splenomegaly, pseudogranulomata of the lungs, small and large intestines, with ulceration of the latter, and necrosis of lymph nodes draining the infected viscera."

The organism regarded by Darling as the cause of the disease which led to the patient's death was round to oval in shape and measured from one to four micra in diameter. By the use of various staining methods, it was seen to have a refractile, achromatic rim within which occurred a polymorphous, chromatin nucleus, basophilic cytoplasm, and achromatic spaces. All attempts to cultivate the organism on artificial media failed. Also attempts to induce the disease in guinea pigs by inoculations of infected human tissue were unsuccessful. The organism was regarded as a protozoan parasite that had not been previously described.

Darling proposed the name *Histoplasma capsulatum* for the organism, and the disease produced by it he called histoplasmosis. Subsequently, Darling encountered two additional cases with the above described symptoms.

Reexamination of Darling's slides in 1912 led to the theory that histoplasmosis was of fungus origin, although final confirmation of this theory did not come until 1932 (see below).

Since physicians failed to report additional cases of histoplasmosis, the disease came to be regarded as a tropical one until 1926 when Riley and Watson⁴ reported a case that occurred in Minnesota. Also in 1926, Phelps and Mallory⁵ described a case of toxic cirrhosis and primary liver cell carcinoma complicated by histoplasmosis of the lung in a Honduran.

The second reported case in the United States was described by Crumrine and Kessel.⁶ Dodd and Tompkins⁷ reported the seventh known case (the third

occurring in the United States) in 1934. Their case had the distinction of being the first recognized during the life of the patient; the diagnosis was made by finding the parasite in the large mononuclear cells of the blood. It was from the blood stream and spleen of this case that W. A. DeMonbrean⁸ isolated the fungus and reproduced the disease in two monkeys by intravenous injections of the yeast phase, thus confirming the theory of the fungus origin of the disease.

Sporadically cases continued to be reported in this country as well as in others. The first extensive review of cases was made by Parsons and Zarafonitis⁹ in January, 1945. These authors reported seven cases and reviewed 71 cases of histoplasmosis. Since that time, numerous cases of all clinical aspects of histoplasmosis have been recorded.

REPORTS OF CASES FROM UNIVERSITY OF KANSAS MEDICAL CENTER

Thirteen cases of proven histoplasmosis have been found at the University of Kansas Medical Center. Twelve of these have been reported elsewhere;^{10, 11, 12, 13} the remaining case is to be reported by Weber and Larson in the near future. The first case of histoplasmosis from the University of Kansas Medical Center was reported in 1943, 11 years after the autopsy was performed.¹⁰ The first case to be diagnosed during the life of the patient was seen in 1945.¹¹

The 12 reported cases are characteristic of histoplasmosis in that they represent all phases of histoplasmosis infection, varying from a benign pulmonary infiltration to disseminated progressive disease. The significant physical and laboratory findings in these patients are illustrated in Table 1. Table 2 shows the results of skin test, complement fixation, mycology, etc., of the last nine cases from the University of Kansas Medical Center.¹³

In all cases the disease was found in white persons. Histoplasmosis occurs more frequently in males than in females. In this series the frequency is 10 males to 2 females.

Every age group is susceptible to infection with *Histoplasma capsulatum*. These cases are distributed as follows: 0 to 1 year, 2; 1 to 9 years, 2; 10 to 19 years, 1; 20 to 29 years, 0; 30 to 39 years, 2; 40 to 49 years, 2; 50 to 59 years, 1; beyond 60 years, 2.

Compiled while the author was a senior medical student at the University of Kansas Medical Center.

DIAGNOSIS

In 1941 Zarafonetis and Lindberg¹⁴ as well as Van Pernis¹⁵ reported skin sensitivity to histoplasmin. These authors observed positive skin reactions in individuals with proven disseminated histoplasmosis, and they suggested the use of skin tests as an aid in diagnosis. Following this, Palmer¹⁶ and Christie and Peterson,¹⁷ working independently, showed that there was a high correlation between skin sensitivity to histoplasmin and the occurrence of pulmonary calcification in tuberculin negative reactors who lived in the central eastern half of the United States. Emmons, Olson, and Eldridge¹⁸ questioned the specificity of the skin test and reported marked cross-sensitivity. However, Christie and Peterson¹⁹ found no true positive reactions to either coccidioidin or haplosporangin in a large group of children and young adults tested with these antigens.

Other similar test groups have been reported with the same results. However, the exact relationship between pulmonary calcifications, positive histoplasmin skin reactions, and infection with *Histoplasma capsulatum* has remained obscure.

Sontag and Allen²⁰ reviewed serial x-rays in a group of children and were unable to show the development of calcified lesions from infiltrative lesions over a period of several years in histoplasmin individuals.

Furcolow, Mantz, and Lewis²¹ reported a study of nearly 16,000 school children in Kansas City, Missouri, with routine skin tests and roentgenograms. In this group they discovered 89 cases with precalcific lung lesions that satisfied the following criteria: (1) skin sensitivity to histoplasmin, but not to tuberculin; (2) persistence of the lesion for at least two months; (3) laboratory exclusion where possible of similar conditions such as tuberculosis, Boeck's sarcoid, Hodgkin's disease, and so on. The authors noted four general groups of lung lesions; these were nodular foci, pneumonic infiltration, disseminated infiltration, and hilar and mediastinal adenopathy. Some of these cases were followed long enough so that definite deposition of calcium had become evident.

Several workers^{22, 23, 24} have demonstrated the effectiveness of a complement fixation test for histoplasmosis in the acute fulminating disease, a strongly positive test (4+) being diagnostic. A direct relationship between the complement fixing antibody and the skin sensitivity to histoplasmin is lacking. However, in suspected cases of mild infection with histoplasmosis, the demonstration of a rising titer of complement fixing antibody would be diagnostic.

Infection with *Histoplasma capsulatum* is manifested in many different ways. In diagnosing these protean manifestations, a universal clinical classification would be helpful. Christie²⁵ was the first to

attempt this. He recognizes four types of disease: (1) healed lesions—especially in the lungs; (2) a benign pulmonary infiltration; (3) symptomatic, nonfatal, nonprogressive infection; (4) a disseminated, progressive disease.

When one attempts to use this classification, it becomes apparent that it is incomplete. In view of the cases reported to date, I would like to propose the following classification:

1. *Acute progressive fatal disease* as shown by Cases 1, 2, and 3. This type is characterized by the following signs and symptoms: fever, weight loss, cough, hepatomegaly, splenomegaly, anemia, leukopenia, and infiltration of lungs.

2. *Chronic progressive fatal disease* as shown by Cases 6, 7, 8, and 11. This type has the same characteristics as the above, but it is arbitrarily limited to those cases in which these signs and symptoms extend over a period of three months.

3. *Benign pulmonary infiltration* as shown by Case 4. This is undoubtedly the most common type, characterized by slight fever, cough, mild weight loss, milary infiltrations, and later calcification.

4. *Healed lesions of the lungs*. Although it cannot be adequately proved, the criteria set forth by Furcolow and Mantz and Lewis²¹ are, in my opinion, quite satisfactory and are merely the end result of the above.

5. *Progressive nonfatal disease* as shown by Cases 5 and 9. This type of disease is characterized by all of those signs, symptoms, and findings of the acute progressive fatal disease, but exhibits spontaneous cures. Unfortunately, cases are seldom encountered that have such a spontaneous recovery. The reason for this cannot be explained at this time.

6. *Miscellaneous lesions*: (a) Laryngeal involvement. This classification is well shown in Case 10. At the time of admission the patient was thought to have carcinoma or tuberculosis of the larynx. Biopsies later showed this to be histoplasmosis. Although this is a rare form of a rather rare disease, it must be considered. Case 11 also had laryngeal involvement, but had the progressive type in addition to this. (b) Cutaneous or mucous membrane involvement. This may occur with or without other forms of histoplasmosis. Although I have no specific cases from the medical center to illustrate this (with the exception of the involvement of the tongue and pharynx in Case 1), various authors find this to be so.

TREATMENT

Treatment of cutaneous and disseminated histoplasmosis has been and continues to be unsatisfactory. Meleney²⁶ in 1940 cited an instance of septic histoplasmosis reportedly cured by the use of Neostam (glycoside of sodium h-stibanilate). Curtis and Grekin²⁷ reported two cases in which sulfadiazine

TABLE 1
PHYSICAL AND LABORATORY FINDINGS OF TWELVE CASES FROM THE UNIVERSITY OF KANSAS MEDICAL CENTER

Case	Enlarged Liver	Spleen	Enlarged Lymph Nodes	Lungs	Pharynx	Larynx	Fever	Cough	Wt. Loss	Dysphagia	Hematological Aspects	
											R. B. C.	W. B. C.
1. Male 42 years	4 Fb.	Enlarged and easily palpable		breath sounds harsh	+	+	+	+	+	+	3.70 to 3.90	4,000-6,200
2. Female 9 mos.	4 Fb.	to Lt. A. S.; I. S.		sonorous rales			+	+	+		2.84	1,250-16,380
3. Male 5 mos.	+	+	+	numerous moist rales			+	+	+		2.95	4,100
4. Male 13 years	neg.										4.2	8,350
5. Female 20 mos.	very +	very +	+	dullness			+	+	+		3.06 to 2.8	2,150-6,400
6. Male 52 years	slight			dullness and rales			+	+	+		4.01	10,250
7. Male 48 years		+		moist rales			+	+	+		1.0 to 4.2	950-7,400
8. Male 37 years		+					+		+		3.0	6,500
9. Male 4 years	+	+		slight rales			+	+	+		3.65	12,900
10. Male 64 years				rales rt. base			+	+	+	hoarseness	5.0	9,500
11. Male 69 years				rales and impaired resonance		+	+	+	+	hoarseness	5.33 to 5.03	7,300-7,800
12. Male 32 years							+		+		4.1	24,000-89,000

TABLE 2
CLINICAL AND LABORATORY FINDINGS FOR NINE PATIENTS FROM THE UNIVERSITY OF KANSAS MEDICAL CENTER*

Case	First Observed	Skin Tests		Complement Fixation	Mycology and Bacteriology		Mycology and Bacteriology—Continued		Chest X-rays	Status	Additional Findings
		Date	Histo. TbcIn.		Date	Spec.	Test	H. c.			
1. Male 13 yrs.	2- 5-45 2- 5-45	2- 5-45 6- 7-45 11-26-45 1- 4-46 6- 4-46 10- 4-48	neg. pos. pos. neg. pos. neg.	8-18-47 neg. 9-18-47 pos. 9-17-47 pos. 6-10-48 to 12- 9-49 } 5 susp.	11-23-45 11-24-45 11-25-45 11-23-45 to 11-25-45 1- 9-46 5- 7-46	gast. gast. gast. gast. 17 gast.	cult. cult. cult. g. pig. 17 cult.	pos. neg. neg. pos. neg.	Miliary infiltrations 4-10-45. Miliary calcifications 12-9-49.	Living and well 3-23-50.	Recovery uneventful.
2. Female 20 mo.	3-24-47 8-25-47 9- 2-47 8-16-49		neg. pos. pos. pos.	9- 4-47 susp. 9-11-47 pos. 10-13-47 pos. 12- 4-47 pos. 10-18-48 neg. 8-16-49 neg. 2-18-50 neg.	8-19-47 8-19-47 9- 2-47 9-2, 3, 5-47 ... 9-3, 5-47	spleen. spleen. gast. 2 gast. 2 gast.	cult. mouse. cult. 3 mice. 2 cult.	pos. pos. pos. neg. 2 neg.	Infiltration in right lower lobe 7-5-47. Calcification in right lower lobe and hilar node 2-18-50.	Living and well 9-18-50.	8-19-47 surgical specimens of spleen, liver and abdominal lymph node showed multiple granulomatous lesions. H.c. not identified on microscopic sections.

3. Male 52 yrs.	10-26-47	10-27-47 1-5-48 10-26-48	pos. pos. pos.	neg. pos. pos.	10-8-47 pos. 10-23-47 pos. 10-28-47 pos. 1-5-48 } 10 pos. 10-6-49 }	10-27-47 10-27-47 10-27-47 10-28-47 10-29-47 10-29-47 12-31-47	spt. gast. biopsy. gast. spt. bronch. spt.	{ cult. cult. cult. cult. cult. cult. 2 g. pigs 2 mice }	pos. neg. neg. pos. neg. pos. pos.	.... neg. neg. neg. neg. neg. neg.	Infiltration of entire left and upper right lobes, 10-23-47. Cavities in upper left and upper right lobes 8-8-49.	Slowly progressive disease 4-12-50.	13 sputum specimens cul- tured 1-15-48 to 12-6-48; 8 positive and 4 negative for H.c., 8 negative for T.b. Animal inoculations of 3 divided specimens: 2 of 7 mice and 1 of 7 rats positive for H.c.; 3 guinea pigs negative for T.b.
4. Male 48 yrs.	5-20-47	5-26-47 7-2-47 7-6-47 7-17-47 7-29-47	neg. pos. pos. pos. pos.	neg. neg.	7-1-47 pos. 7-2-47 pos. 7-8-47 neg. 7-16-47 pos. 7-16-47 pos.	5-27-47 5-28-47 5-29-47 7-2-47	gast. gast. gast. spleen.	{ g. pig. cult. g. pig. cult. g. pig. cult. section }	neg. neg. neg. neg. pos. pos.	neg. neg. neg. neg. neg. neg. neg.	Infiltrations in right and left lungs with cavity in the left, 3-15-45. New infil- tration in right mid- lung field 6-13-47.	Died 9-8-47.	Autopsy: Pooled organ cul- ture positive for H.c.; lung culture and guinea pig posi- tive for both H.c. and T.b.; adrenal culture contam- inated; guinea pig positive for both H.c. and T.b.
5. Male 37 yrs.	10-21-47	11-5-47	neg.	neg.	11-5-47 pos.	.....	.....	.....	....	....	Diffuse granular infiltrations 11-3-47.	Died 11-7-47.	Autopsy diagnosis: general- ized histoplasmosis. Tissue sections of lung, liver, spleen, lymph node positive for H.c.
6. Male 4 yrs.	9-11-46	8-25-46 9-11-46 10-17-46 12-3-46 4-22-47 8-12-47	doubt pos. pos. pos. pos. pos.	neg. neg. neg. neg. neg.	8-12-47 pos. 1-2-48 pos. 4-7-48 pos. 11-16-48 pos. 4-29-49 pos. 12-28-49 susp.	9-12-46 9-12-46 9-13-46 9-13-46 9-17-46 9-16-46 10-17-46 10-19-46 1-29-48	blood. gast. marrow. 5 gast. blood. 4 gast. tonsil.	cult. cult. cult. { 10 cult. 1 hamst. cult. 4 cult. { 1 cult. 4 mice }	neg. neg. neg. 5 neg. neg. neg. neg. pos. neg.	.... neg. neg. 5 neg. neg. neg. neg. pos. neg.	Miliary infiltration 9-3-46. Miliary calci- fication 12-28-49.	Living and well 12-28-49.	Tonsil sections showed granuloma but H.c. not identified in sections.
7. Male 64 yrs.	9-6-49	11-14-49 12-7-49 1-9-50	pos. pos. pos.	neg. neg. neg.	11-17-49 } 5 pos. 12-28-49 } 12-30-49 } 4 susp. 2-6-50 } 2-10-50 pos. 2-15-50 pos. 2-17-50 susp. 2-27-50 pos.	{ 11-9-49 to 12-28-49 } 12-28-49	16 spt. spt.	{ 19 cult. 15 mice. g. pig.	9 pos. 6 neg. 5 pos. 10 neg.	4 neg. neg.	Infiltration in left lower lobe 9-6-49. Marked clearing in left lower lobe 1-31-50.	Discharged improved from hospital 3-9-50; still improving when last seen on 4-11-50.	Laryngeal biopsies 9-26-49, 11-3-49 and 1-4-50: acute and chronic granulation tissue with H.c. in mono- nuclear and giant cells.
8. Male 69 yrs.	12-13-49	11-13-49 12-13-49	pos. pos.	neg. neg.	11-16-49 pos. 12-13-49 pos. 12-16-49 pos. 12-18-49 pos. 12-30-49 pos.	12-14-49 to 12-23-49 } 12-16-49	22 spt. 3 spt.	{ 28 cult. 6 mice. g. pig.	20 pos. { 2 neg. { 4 pos. 2 neg.	6 neg. neg.	Generalized bilateral granularity 11-10-49. Granularity in right upper lobe 12-13-49.	Died 12-27-49.	Laryngeal biopsy 11-18-49; positive histologically for H.c. Autopsy diagnosis: generalized histoplasmosis; chronic femoral phlebitis with terminal pulmonary embolus. Lung, blood, brain, adrenal, liver, heart, spleen and larynx cultures positive for H.c.; pooled organ in- oculation of 2 mice positive for H.c.; 2 cultures and 2 guinea pigs negative for T.b.
9. Male 32 yrs.	2-25-48	2-28-48 3-1-48 10-26-48 5-25-49 9-26-49	.... pos. pos. pos. doubt.	pos. pos. pos. pos.	3-1-48 } 8 pos. 8-13-48 } 10-25-48 } 3 susp. 1-24-49 } 2-16-49 } 7 neg. 7-14-49 } 3 susp. 8-11-49 pos. 9-26-49 neg.	3-3-48 to 9-29-49 } 3-23-48 to 9-29-49 } 4-23-48 3-31-48 to 8-18-48 }	18 spt. 6 blood. spt. 11 gast.	{ 31 cult. 6 mice 6 cult. cult. 11 cult. 11 mice 3 g. pigs }	18 neg. 6 neg. neg. pos. 11 neg. 11 neg.	13 neg. 7 neg. 3 neg.	Scattered soft infil- trates 3-3-48. Disseminated and coal-tar infiltrates 9-21-49.	Died 10-12-49.	Atypical acid-fast organisms cultured from sputum 3-10-48, from an abscess 8-6-48 and from 1 of 3 guinea pigs inoculated with pooled autopsy organs. Autopsy diagnosis: peri- arteritis nodosa and granu- lomatosis of unknown etiol- ogy. Cultures and animal inoculations of autopsy tis- sues all negative for H.c. and T.b.

was thought to have improved the local lesions; however, follow-up biopsies revealed that microorganisms were still present. Blumberg, Ruchman, and Johansmann²⁸ reported a child who recovered after being given supportive care and transfusions of whole blood from the mother, who was strongly sensitive to histoplasmin.

Seabury and Artis²⁹ did *in vitro* susceptibility studies with Neostam, sulfadiazine, sulfathiazole, streptomycin, penicillin, nearsphenamine, and stilbamidine and found that only the latter two in concentration of 100 mg. per cent and 10 to 100 mg. per cent prevented the growth of *Histoplasma capsulatum*. Levy³⁰ reported on the use of sodium iodide, Neostam, fuadin (sodium antimony III biscatechol 2, 4-disulfonate), sulfanilamide, proflavin, thymol, B-9 (an organic iodide compound), and sodium propionate in the treatment of histoplasmosis experimentally induced in white mice. None proved to be effective.

The use of ethyl vanillate (ethyl 4-hydroxy-3-methoxybenzoate) in the treatment of disseminated histoplasmosis was first reported in 1951 by Christie, Peterson, and McVickor.³¹ Of the 12 cases treated, five survived and were reported well at the time of publication; however, these authors did not utilize control cases for evaluation.

The therapeutic blood level of ethyl vanillate is reported to be 20 to 30 mg. per 100 cc. Levels of more than 40 mg. per 100 cc. have been associated with stimulation of the respiratory center, necrosis of hepatic cells, and degenerative changes in the proximal convoluted renal tubules. The authors conclude by stating, "The margin between effective therapeutic levels and those which produce toxic manifestations is only about 25 to 30 per cent, a margin of safety too small for a desirable therapeutic agent."

Ellis, Scott, and Miller³² reported an apparent cure of disseminated histoplasmosis using ethyl vanillate. Much more interesting is their use of propamide (4-4' diamidino diphenoxypropane) 0.1 per cent solution in saline and varidase (100,000 units of streptokinase and 25,000 units of streptodornase) dissolved in 10 cc. of saline. After two periods of treatment of 14 days each, examination disclosed marked improvement and then no evidence of epiglottic granuloma caused by *Histoplasma capsulatum*.

Locket, Atkinson, and Grieve³³ reported a case of histoplasmosis in Great Britain, which they treated first with hydroxystilbamidine for 10 days, and then ethyl vanillate; however, in this case both were ineffective, and the patient died.

Seabury³⁴ reported two cases treated with stilbamidine (4-4' dismidinostilbene). One, a case of histoplasmosis of the penis, was given a total of 7,457 mg. following which a biopsy of the lesion showed *Histoplasma capsulatum*. The second, proved by

laryngeal biopsy, received a total of 6,275 mg. and subsequently died. The author concludes: "Although both patients were regarded initially as demonstrating improvement while under treatment with stilbamidine, this was temporary and the drug could not be said to have modified the course of the disease to a significant degree."

Parsons and Zarafonitis⁹ reported an ulcer of the tongue, proved to be histoplasmosis by biopsy, cured by "superficial x-ray." In another case roentgen therapy in fractionated doses was applied to large ulcers of the lip and tongue. Nine hundred roentgens were given at each of several points. During treatment the lesion showed some reduction in size, but healing never occurred. These authors further state, "Roentgen therapy has been used in several other cases without success."

COMMENT

The signs and symptoms of histoplasmosis show wide variation and may be of short or long duration. Originally this disease was thought to be uniformly fatal, but numerous cases of the benign type prove this reasoning incorrect.

SUMMARY

1. A review of 12 cases of proven histoplasmosis seen at the University of Kansas Medical Center is presented.
2. Histoplasmosis can occur at any age, is seen predominately in the white race, and appears to be more common in the male.
3. The diagnosis of histoplasmosis is made by the following: suspicion; skin tests; complement fixation; biopsy, and culture from lesion, when visible.
4. A new clinical classification for the lesions seen in histoplasmosis is set forth.
5. Treatment at present is inadequate and results are discouraging. Ethyl vanillate is the drug of choice.

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The Local Health Officer—The General Practitioner in Public Health

Vernon M. Winkle, M.D.

Topeka, Kansas

Tumultuous changes have taken place in our country since the turn of the century which have changed completely the economic and social pattern of the mid-twentieth century citizen as compared with his counterpart at the beginning of the century. That tremendous progress in all phases in American life has occurred, with deep shadows and overtones here and there, cannot be denied. At the mid-century point we find a greatly more satisfying standard of living for the average citizen than was possible at its beginning, and looking to the future there is, to a much greater degree, a definite challenge.

Medicine, public health and the social sciences have been right in the center of this maelstrom of changes. We arrived at this century's half-way point with a health record never before so satisfactory. To illustrate briefly, since 1900 the death rate for influenza and pneumonia had dropped in 1948, from 181.5 per 100,000 people to 38.7; for tuberculosis, from 201.9 to 30; for diphtheria, from 43.3 to 0.4; for scarlet fever, from 11.4 to a small fraction of 0.1, a figure which in 1948 represents only 68 deaths in the entire country. The death rate for the nation for 1954 is below 10 per 1000 population, the infant

death rate below the first year of life is the lowest in history, and the expectation of life between 1900 and 1950 increased from 49 to 68 years.

Many new discoveries such as the sulfonamides, the antibiotics, ACTH and cortisone; improved medical and surgical techniques and new surgical approaches toward the cure of many conditions for which no treatment was known; improved old methods, and many new developments in anesthesia have greatly contributed to this favorable picture.

The interweaving of many advances in medical knowledge, medical practice, medical training, sanitation, and public health measures has made marvelous contributions to the control of many of our contagious and infectious diseases and has reduced previous scourges almost to the point where they are now medical curiosities. Take smallpox vaccination, for example: it has reduced the incidence of smallpox in the United States almost to the vanishing point, and it is quite possible that recent medical graduates may have had their training and may practice a lifetime without seeing a single case. In fact, our knowledge about disease and how to control it has increased at such an accelerated rate and so much useful information has been accumulated that no man can have even a fair acquaintance with all of it.

Presented before the Golden Belt Medical Society, Salina, Kansas, January 13, 1955. Dr. Winkle is Director, Division of Local Health Services, Kansas State Board of Health.

It has been said that Lawrence J. Henderson, a Harvard biological chemist, once remarked that somewhere around 1910 the progress of medicine in America reached the point where it became possible to say that a random patient with a random disease consulting a physician at random stood better than a 50-50 chance of benefiting from the encounter.¹ If that were true in 1910, I am sure that his chances in 1955 are certainly much better than 50-50.

Let us look more precisely at public health over this period of time. After all, public health as we know it today is not very old. Only two of our present procedures, vaccination and sanitation, are of even respectable age, and almost all of what we now take to be a normal program of public health endeavor has been developed within the period of service of men still active in the field.

I presume that we may date the beginning of public health in this country with the passage in 1647 by the Colonial Legislature of regulations for the prevention of pollution of Boston Harbor. Wilson G. Smillie, in his book titled *Public Health Administration In The United States* relates that in 1850 Lemuel Shattuck wrote an extraordinary report of the sanitary commission of Massachusetts. In this report, he recommended the establishment of a state board of health for Massachusetts with powers to appoint a suitable, competent, well-paid full-time secretary. He made a number of other recommendations in this report, most of which have been included in the development of modern public health practice. Another 16 years needed to pass, however, after the recommendation of Shattuck that a state board of health for Massachusetts be appointed, before that state took this step in 1869. There were, however, a number of cities and some smaller towns that had organized boards of health, largely because they felt the need of an organization to solve specific emergencies. By the year 1900, 39 states had organized health departments with New Mexico being the last one to do so in 1919.²

The most rapid progress made in public health during the years 1850 until about 1912-1913 was in the field of sanitation, and this progress has continued at a rapid pace to the present time. We now know how to develop and maintain safe water supplies and distribution systems, how to develop adequate sewage treatment and disposal plants, satisfactory sanitation techniques involved in the processing and delivery of milk and in the handling and distribution of food products, and have learned much in the way of sanitation methods related to public buildings, schools, and housing. Insect and rodent control has been developed to such a high degree that it is interesting to note that the United States has been free of yellow fever since 1905 and almost free of

malaria for a decade. So effective are public health measures in mosquito control—for example, in the prevention of malaria—that in 1950 the state of Mississippi offered a bonus of \$10 to any doctor who found a new case of malaria. Not a single new case was reported.³ Good sanitation practice has had much to do in keeping the incidence of infection by the typhoid bacillus and the other *Salmonellas* at a low ebb.

During this time, public health administration in the United States has been largely in the developmental stage, and it is true today that we have many problems which need to be solved in the way of organization and administration of public health services. Much progress has been made, however, and many authorities in public health believe that the initial developmental stages have been passed and that we have learned enough to know the direction in which we must go and also many of the best roads to take in arriving at the destination of good sound public health practice which will benefit all the citizens in the way we hope it will.

Since 1885, with the establishment and organization of the Kansas State Board of Health, we have been right in the thick of the development of public health. Kansas has made many contributions to the advancement of this science and has produced a number of outstanding leaders and authorities in this field who are well known to you all. We have, however, still much to do in order to bring our public health program in Kansas to the place where all of us, I am sure, would like to have it.

May I direct our thoughts to the development of local health services for Kansas. In the development of these services, the local health officer has the major role to play. Dr. J. W. R. Norton, state health officer and secretary of the State Board of Health of North Carolina, feels that many pioneer physicians in public health realized early that most public health problems were local in origin and needed for their solution some type of local health organization. After extensive trials and experiments, many came to the conclusion, about 40 years ago, that the best agency for solving local health problems was the permanent local health department, manned by well-trained personnel, devoting their full time to the prevention of disease and the promotion of public health, in the area over which the department has jurisdiction. All of these leaders constantly stressed teamwork among all medical workers and with the public.⁴

With the beginning of the second decade of this century, organized county health department work had its beginning, and the remarkable progress obtained in public health practice since that time can be attributed largely to the adherence to this basic principle of teamwork among public health workers, the

medical profession, and the local communities.

I am firm in the belief that what I understand public health to mean is a medical specialty—it is definitely a part of the field of medicine in its broadest aspect. Because I am firm in this belief, I feel that the direction of public health practice in any community must be sponsored and controlled by the medical profession. We are keenly aware of the tremendous complexity of the medical sciences. I have already said that the vast amount of information that is available to physicians is beyond the scope of any individual physician's complete understanding. Therefore, teamwork in medicine is of the utmost importance, and in the specialty of public health this, perhaps, is more fully realized than in any other specialty in medicine.

In public health, we deal so much with disciplines wholly untrained in medicine, in its ethics, in its methods of procedure and in its basic tenets, that I believe it is imperative that we have, as the directors and leaders of our local health services (at the community level), physicians who have a good understanding of the broad field of public health. While I recognize public health as a specialty—and physicians who are well-trained in this field can be classified as such—I believe that the local health officer has a position within public health that is very much akin to the general practitioner of therapeutic medicine.

Theodore J. Curphey, M.D., chairman, Council Committee on Public Health and Medical Education of the Medical Society of the State of New York, believes the public health physician occupies a unique position in the field of medicine. In response to a demand—sensed equally by the state and by medicine—for the provision of a special type of medical care for the community, it became evident to the profession that there was a need for certain health services to the public in addition to the usual care of the sick. The origin of the public health physician, then, presents an evolutionary growth, whereby the inability of the general practitioner to meet many medical social problems was naturally followed by the establishment of a medical specialty embracing the fields of both the medical and the social sciences. This demand was met by certain members of the medical profession who first familiarized themselves with the special knowledge and techniques of both fields and then placed themselves and their professional skills at the disposal of the state, on which this responsibility naturally devolved.

By so doing, medicine became able to provide a comprehensive service to the citizen, embracing the knowledge that both sciences offer toward the general preservation of health and the cure of disease. A physician directing the public health program of a local community recognizes the need for a wide

application of the techniques of the art and science of medicine in the general care of the health of the community. In so doing, he must condition his thinking to the necessity for giving equal weight to both the medical and social needs of his community.⁵ He, too, soon learns that he must maintain a close working relationship with those elements of our society which concern themselves with the improvement of medical care and our standard of living through the avenues of legislation—and politics, if you please. He is frequently impressed with the desirability of a close working relationship among the local community groups and agencies, governmental facilities, and professional groups in furthering progress in good, general medical care. As a general practitioner in public health, he will need to utilize all of the services available to him in his community and his state in order to bring the best public health practice to his patient, the community he serves.

Kansas' public health service has been predicated on the belief that a strong local health department serving a local community is the basic unit in its organization for the administration of public health in Kansas. Promotion and development of adequate local health departments is difficult. Total population and area influence profoundly the public health machinery for any governmental unit. We believe, in Kansas, the county to be the best unit of government around which to organize local health services. Our counties vary in population from a few thousand to many thousands; our rural populations are compact in a few instances, notably Wyandotte and Sedgwick counties, and are widely scattered in many of our most western counties. To establish a uniform pattern of organization of local health services in Kansas is an impossibility. We believe we can, however, establish a certain overall pattern of organization which can be tailored to fit the unit area which we wish it to serve.

Wilson G. Smillie says that public health must be based on the principles of preventive medicine if it is to assume a real place in the scientific application of knowledge. These principles are changing constantly with the accretion of new knowledge. Thus public health must be dynamic, not static. The health officer should be free to try out new methods and, more important still, to discard old practices that are unfruitful. He must be constantly changing emphasis on activities, personnel, and points of view.⁶

J. W. R. Norton, health officer of North Carolina, in discussing states in which attempts to develop local health departments have failed, noted that the central state staff tends to become unwieldy, fails to provide for public health services in rural areas, and loses touch with the medical profession in private practice. With two competing types of public health organization in this country, future trends might

lean either way. It is of vital importance to the future freedom of private medical practice that we continue to work energetically toward full coverage of rural areas by sound local health departments with generalized programs.

The trend toward centralization and topheaviness, with consequent lack of responsiveness to local needs and to medical guidance, are as undesirable in public health as in curative medicine. General practice through local health departments constitutes the only sound foundation for public health services, just as general family medical practice is basic in the best medical care. These two supplement each other, and both are necessary as a foundation on and through which to develop the best use of specialists' services in public health and in curative medicine.⁷

To maintain goals already reached in public health, to attack present needs, and to anticipate the future needs in Kansas, the skill and training of professional technical personnel of several categories is important. Physicians, nurses, sanitarians, clerks, health educators, dentists, and statisticians are needed. They must be imbued with enthusiasm for their jobs and possess the required skills to produce the quality and quantity of services necessary to produce results; they must devote full time to their jobs, live in the local area of work, and know the people they serve as well as their health problems.

It is a well-established fact that the success of a health department is dependent to a large extent upon the quality of its staff. Quality is dependent upon training and experience. There are certain characteristics which everyone recognizes as being essential in an employee who works with others. These qualities are individual; they cannot, however, substitute for the specialized training which professional public health workers must have to function effectively.

Accomplishment by official public health agencies will continue to be measured at the point of delivery. That is the point at which the individual, family, and the community receive or fail to receive the health guidance and the health protection necessary for healthful living.

Kansas has 17 out of its 105 counties which maintain organized county health departments. These organizations take various patterns, some being county health departments and some city-county health departments, and two areas maintain a bi-county health department. Together, these 17 counties budget approximately one and a quarter million dollars a year to maintain their health services. Most of these health departments have inadequate staffs—many of the staff personnel are not sufficiently well-trained for the positions they hold and, in some, due to these inadequacies, programs and services do not deliver to the citizen in the communities they serve the health

guidance and health protection which he has a right to expect.

Measures for the control of disease which are ordinarily used by public health agencies fall generally into two types. Dr. Thomas R. Hood, the executive secretary of your state board of health, has described these two types.

The first type of activity is one which requires action at a single point in the state or community to implement measures having beneficial effect on the health of the populace. Once these measures have been established, they do not require active participation by individual citizens. The citizens are passive recipients of benefits. They should initially exercise a choice as to whether they wish to use and pay for such measures; however, once these measures are started and provision is made for financing them, the individual citizen becomes a regular recipient without further action or thought on his part. Examples of this type of health protective measure include establishment of a sanitary milk supply, provision of a safe municipal water supply, sewage treatment facilities, provision for a healthful environment in schools, restaurants, hospitals, and boarding homes, fluoridation of municipal water supplies, enrichment of flour, and many others.

While the ultimate effect of measures of the above type has not yet been felt, still a great deal has been accomplished. Continuing programs are under way which promise to apply many such health protective measures in an increasingly uniform and complete fashion. Even if we should approach perfection in these fields, continuing action would be needed to maintain these beneficial services and, doubtless, to apply new techniques and measures as they are developed.

The second general type of public health service requires personal participation on the part of individuals who wish to receive its benefits. While health education is an important part of the services described above, it becomes increasingly potent, necessary, and indispensable in carrying out preventive health measures demanding continuing individual participation. Health education information techniques must be applied intensively and continuously.

The citizen not only needs to have information available but needs also a thorough understanding of the importance of applying the information at hand to himself and his family. He learns most if he helps discover and define his health needs and helps develop the needed action. Although some achievements and advancements have been made in this type of service, application of existing knowledge is quite spotty and far from complete. Examples of this type of service include immunization against communicable diseases, early case-finding and contact tracing of tuberculosis and venereal disease, and early case-

finding in chronic diseases such as diabetes, obesity, cancer, heart diseases, mental illness, and other chronic ailments which are assuming greater and greater proportions. Included most emphatically in this list is the problem of controlling the tremendous number of deaths, injuries, and lost time from accidents of all varieties.⁸

We have already mentioned the many gains which have been made in public health. As we think in terms of future programs for local health services, we think first of maintaining the gains that have thus far been made and taking care of the unfinished business which still remains; and second, attacking more vigorously the problems presently remaining as we see them. In Kansas, we have acute infectious diseases pretty well under control. Continuing vigilance plus an intensification of those immunization procedures which we have available for whooping cough, diphtheria, tetanus, and smallpox, concentration on procuring as nearly 100 per cent immunization against these diseases as is possible in all children before they reach their first birthday, and development of a schedule for booster doses in older children, should hold the line.

We need to give greater attention to accurate and more complete reporting of cases, particularly with regard to infectious diseases such as tuberculosis and venereal disease, and to some of the diseases which are quite prevalent in our state for which we have less satisfactory control measures as well as unsatisfactory therapeutic regimes. This latter group includes diseases of the gastrointestinal tract, particularly the Salmonella group, infectious hepatitis, and undulant fever. Careful reporting of these diseases will place your state board of health in a better position to do a reasonable amount of research and epidemiological study in order to learn more about their control.

Careful attention needs to be given to the degenerative diseases, to nutrition, and to better housing as it relates to living for the aged. We need to continue to give careful thought to mental hygiene as it relates to the public health of the community. We need to give far more attention and thought to rehabilitation of the aged and to the other age groups of patients who can benefit from rehabilitative procedures.

I believe it is fair to say that public health deals largely with health education. Much of the success that a physician has with his patient is his ability to create, on the part of the patient, a desire to get well and to follow those practices prescribed which will keep him in optimal health. So, too, must the health department create within a substantial percentage of the population of a community a desire to want to improve its community health. Walter F. Snyder, executive director of the National Sanitation Foundation, says that if we ever have a clean city in the

United States it will be because the people of that city want it to be clean and are willing to do something about it.

A health officer cannot force a city to be clean. All that official agencies can really do is to suggest ways which will help. In a democracy, governments and health departments do not mold the population into a cultural pattern by regulations, regardless of their technical validity. The most effective role of a public health official in influencing permanent environmental changes is that of a democratic leader who helps community and neighborhood groups to study their problems and seek a solution which they can, in turn, carry out.⁹

It follows then that our job of health education in a community is not complete until we have created a desire on the part of the community as a whole to do something about health problems. Educational procedures directed toward the community are important; so, also, are education procedures directed to the medical profession itself.

In the report titled *The Physician and Child Health Services*, published by the American Academy of Pediatrics, it is stated that increasing emphasis on preventive pediatrics is so significant that hospital care for children must reflect this trend. From the earliest days of pediatrics, individual physicians specializing in child care have been actively concerned with the welfare of all children. In many communities they have helped develop general public health services as well as those directly concerned with child health. Because these efforts increased people's awareness of the value of medical services, they have also increased the demand for pediatric care and have benefited both pediatricians and general practitioners.

This observation is supported by the study findings which showed that public child health services are only a small fraction of the total health services for children; that public programs emphasize case-finding and referral to treatment resources in the community; and that 90 per cent of medical care is in the hands of private practitioners. It showed, too, that more child health care—as well as the highest proportion of health supervision—was given in the offices of general practitioners and pediatricians who practiced in communities with well-developed health services.¹⁰ This may indicate that physicians will soon not only ask, when seeing patients, "What do we have? Where did he get it? How did he get it?"—but also, "Could it have been prevented?"

SUMMARY

I have endeavored to point out certain salient features of local health department services as follows:

1. That public health is a medical specialty, and that within that specialty the local health officer may

well be considered the general practitioner in public health.

2. That a well-organized local health department is the basic unit in Kansas' public health program.

3. That the best agency for solving local health problems is a permanent local health department, manned by well-trained personnel who will devote their full time to the prevention of disease and the promotion of public health.

4. That the practice of public health is an essential part of the field of medicine and, as such, should be under the direction of physicians.

5. That progress in medicine and public health over the past 50 years has been mentioned briefly and some of the problems to which we need to give special attention in the future have been pointed out.

6. That teamwork between the medical profession and all the ancillary disciplines necessary to the execution of well-planned public health programs is a MUST.

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Justice is the happy—but rare—quality in accordance with which each gives and gets his proper share. Those who are truly dedicated to peace—in the world, in the nation, in the professions, in the home, or in their own hearts—know that peace can be had only through justice. So as doctors and citizens it is our duty to war against injustice, from the sphere international to the sphere personal, that justice and peace may be ours.

—Elton W. Lance, M.D., President
Medical Society of New Jersey

Before World War I, a tailoring firm which claimed in the chaste pages of the *Saturday Evening Post* that it purveyed its talents and worsteds to the business and professional leaders of the land, had this as its slogan: "If you think clothes don't make any difference in a man, try walking down the street without any."

Just a touch of paraphrasing and we have: "If you think doctors don't make any difference in a community, try living in one without any."

Mr. Frederick W. Ware, Managing Editor
Omaha World Herald



The essay written by Oliver Wendell Holmes on "The Contagiousness of Puerperal Fever" in 1843 is famous for having demonstrated the now-established fact that such infections can be transmitted from a patient (or corpse) to another patient.

Less familiar are the circumstances of its re-publication in 1855. Originally published in a journal which was issued only one year, the essay did not receive widespread distribution. An introduction to this second publication shows the conscientious desire of Dr. Holmes to teach the profession the things he had learned about puerperal fever, his spirit of true service, and the sarcasm with which he could taunt his critics.

"It is not merely on account of the bearing of the question—if there is a question—on all that is most sacred in human life and happiness, that the subject cannot lose its interest. It is because I most fully believe that a fair statement of the facts must produce its proper influence on a very large proportion of well constituted and unprejudiced minds.

"I do not know that I shall ever again have so good an opportunity of being useful as was granted me by the raising of the question which produced this Essay. For I have abundant evidence that it has made many practitioners more cautious in their relations with puerperal females. . . . And, for my own part, I had rather rescue one mother from being poisoned by her attendant, than claim to have saved forty out of fifty patients, to whom I had carried the disease. . . ."

" . . . I find, on reviewing it, that it anticipates and eliminates those secondary questions which cannot be entertained for a moment . . . it mentions, fairly enough, the names of sceptics, or unbelievers . . . it meets all the array of negative cases. . . . It makes full allowance for other causes besides personal transmission . . . it allows for the possibility of different modes of conveyance . . . it recognises and supports the belief that a series of cases may originate from a single primitive source which affects each new patient in turn. . . . Where facts are numerous, and unquestionable, and un-

equivocal in their significance, theory must follow them as it best may, keeping time with their step, and not go before them, marching to the sound of its own drum and trumpet. Having thus narrowed its area to a limited practical platform of discussion, a matter of life and death, and not of phrases or theories, it covers every inch of it with a mass of evidence which I conceive a Committee of Husbands, who can count coincidences and draw conclusions as well as a Synod of Accoucheurs, would justly consider as affording ample reasons for an *unceremonious dismissal* of a practitioner (if it is conceivable that such a step could be waited for), after five or six funerals had marked the path of his daily visits, while other practitioners were not thus escorted. To the Profession, therefore, I submit the paper in its original form, and leave it to take care of itself.

"To the Medical Students, into whose hands this Essay may fall, some words of introduction may be appropriate, and perhaps, to a small number of them, necessary. There are some among them who, from youth, or want of training, are easily bewildered and confused in any conflict of opinions into which their studies lead them. They are liable to lose sight of the main question in collateral issues, and to be run away with by suggestive speculations. They confound belief with evidence, often trusting the first because it is expressed with energy, and slighting the latter because it is calm and unimpassioned. They are not satisfied with proof; they cannot believe a point is settled, so long as everybody is not silenced. They have not learned that error is got out of the minds that cherish it, as the taenia is removed from the body, one joint, or a few joints at a time, for the most part, rarely the whole evil at once. They naturally have faith in their instructors, turning to them for truth, and taking what they may choose to give them; babes in knowledge, not yet able to tell the breast from the bottle, pumping away for the milk of truth at all that offers, were it nothing better than a Professor's shrivelled forefinger." This comment may apply also to some "medical students" who have graduated!—(O.R.C.)

PRESIDENT'S PAGE

DEAR DOCTOR:

In this issue of the JOURNAL you will find listed the Kansas Medical Society committees for 1955-1956. It is a long list but worth reading. Regardless of where you live in Kansas there is, in almost all cases, a member of each committee close to you, ready to confer with you and to answer your questions. Obvious exceptions are the Committee on Rural Health, which is restricted to smaller communities, and the Committee on Emergency Medical Care, which is concentrated in the large "target areas."

In addition to this geographic representation, an attempt has been made this year to limit each man's assignment to one committee. This serves to spread the work and responsibility of the Society over a wider base and at the same time tends to protect the organization against disruption of committee work through death, illness, or removal from the state.

Many of you who are not familiar with the by-laws will be surprised to learn that each committee is not the brain child of the incoming president alone. In many instances the preceding year's chairman and part of the membership, varying from "a portion" to one-half, must be retained on the new committee. In a few instances appointments run for three years, and in rare cases the exact composition of the committee is specified in the by-laws.

This year a new chairman has been named for each committee with the exception of the Committee on Constitution and Rules which is headed as usual by Chief Justice Fegtly, and even he was given an assistant. Removal of some chairmen after only one year's service is probably not fair, but in order to discontinue other chairmanships which had persisted for many years it seemed best to wipe the slate clean.

This selection of committee members and chairmen will no more approach perfection than it has in previous years. We can only hope that the misfits will not be serious and that even though the committee is not the one you would have chosen each appointment will serve as a challenge and a stimulus. Without the faithful and often unrecognized work of these committees, there would be no Kansas Medical Society as we know it. If, a year from now, I can look back on a successful year as Murray Eddy can do now, it will be because of these committees.

J. M. Porter

EDITORIAL COMMENT

THE 96TH ANNUAL SESSION

The 96th annual session of The Kansas Medical Society was held in Hutchinson, May 1-5, 1955. It was the first time in some 25 years that The Kansas Medical Society met in any except the three largest cities of the state. It was a splendid meeting with several innovations that were received with interest.

Hutchinson, while perhaps lacking somewhat in preferable housing for a convention of this size, compensated in other advantages. The Arena is the largest building adaptable for this meeting in Kansas. There was ample space for exhibits, meetings, and for cars to park. Lunches served by J. S. Dillon and Sons were excellent, promptly served at the Arena, and economical in cost. The hotels, filled to capacity, made every effort to accommodate all guests and extended their hospitality to the physicians of Kansas in admirable fashion.

The exhibits were attractively displayed in a hall well adapted to this purpose. The 27 scientific exhibits were not only the largest number ever shown to The Kansas Medical Society but were distinctive because of their originality and excellence of presentation. Some 65 commercial exhibits were on display covering the entire field of medical supplies including surgical, pharmaceutical, nutrition, and literary material.

Special events lived up to all expected standards. The Prairie Dunes Golf Course was an exceptionally interesting layout, tricky to play and a worthy adversary to the best golfers this Society has to offer. The banquet in the ballroom of the Baker Hotel provided a fine meal, unusual entertainment, and a dance.

The scientific program was of such interest that the meeting hall was comfortably filled most of the time. In fact, exhibitors became concerned over the empty hall which was occasioned by the fact that members did not leave the meeting until its conclusion. The innovation of holding sectional meetings on Thursday morning was so well received that it appears destined to become a permanent convention attraction.

Attendance was good. While somewhat less than the usual number of physicians attended, it is nevertheless true that more doctors traveled to attend this meeting than have come to any annual session in recent years. Each of the other convention cities has a nucleus of 200 to 300 local members, all of whom attend to increase the total registration. If this figure is subtracted, more doctors traveled to Hutchinson than normally travel to Kansas City, Topeka, or Wichita to attend the convention. Moreover, this site brought large numbers of western Kansas physicians

who have some difficulty in going to the more eastern cities.

So it was a good convention. Certainly no host society ever worked harder than did the members in Reno County. Dr. A. C. Armitage, general chairman, and almost every other member of the entire society gave up uncounted hours of time to prepare for all the hundreds of details that attend such a project. They performed a magnificent task to make the meeting run smoothly, without a noticeable lapse in any detail. The Kansas Medical Society extends its thanks to the Reno County Medical Society and to the city of Hutchinson for their hospitality and for the preparation of an annual session that will long be remembered by all who were present as among the very finest in the history of this Society.

FUTURE MEETINGS

Plans are now made for the next four annual sessions, their meeting places, and the dates. This includes the centennial in 1959, an occasion The Kansas Medical Society proposes to commemorate with enthusiasm.

The centennial will be in Topeka, May 3 to 7, 1959. A committee is already working to make this meeting the one singular event in the hundred-year history of this Society. Other special events during that year are also being planned, especially a public meeting on or about February 10, 1959, which is the 100th birthdate of the receipt of a charter from the Territorial Legislature of Kansas. This will be an important year for Kansas doctors, an occasion during which all members will be invited to participate locally and on statewide events to make it outstanding by every standard. But much more will be said on this subject in coming months.

The next annual session will be in Topeka, April 29 to May 3, 1956. Following that, The Kansas Medical Society goes to Wichita for the 98th annual session, May 5-9, 1957. The 99th annual session will be in Kansas City, May 4-8, 1958, and the 100th event will be celebrated in Topeka, May 3-7, 1959.

GENERAL PRACTITIONER OF THE YEAR

The American Medical Association during its December meeting each year honors a physician for outstanding service in the field of general practice. The selection is made from nominations submitted by the various state societies. This recognition is of course a high tribute to an individual from the members of his profession. It is also a splendid recognition to the sponsoring state medical society and rep-

resents a news story with great public relations potential.

When a physician receives national recognition for outstanding service in the field of general practice, this implies that all doctors in the area are rendering comparable service. It appears that such recognition would be of especial significance to a predominantly rural state. Kansas, for example, could name many members who would well qualify for this honor, who have demonstrated the highest ideals in the practice of medicine, who have been not only outstanding physicians but have been equally outstanding as citizens of the community in which they live.

And yet, Kansas has never submitted a nomination for this award. Perhaps no other state has received equal recognition with Kansas for achievement in rural health. The Kansas Plan is still, after five years, making national news. The development of the University of Kansas School of Medicine is looked upon with envy from all over the United States. The Kansas mental health program is being studied and copied internationally. The various postgraduate programs offered Kansas physicians have received professional comment in many medical publications. The services rendered to the public by the doctors of Kansas have created an enviable co-operation between the profession and the people. Kansas, therefore, is a successful pioneer in everything the national General Practitioner of the Year award is designed to commemorate. And yet, Kansas has never submitted a candidate for this honor.

The Kansas Medical Society has created a committee consisting of a member of the Council, the president of the Kansas Academy of General Practice, and three other physicians named by the president which is annually to select a name for this honor. This committee has advised each county medical society to submit a name for consideration. This must be done soon because the Kansas selection should be sent to the A.M.A. some months before December. It will require time for the committee to make its selection and to assemble appropriate biographical material. It is hoped that each county society in the state will this year prepare a nomination. It is hoped that this project will become of interest to all members and that each will aid the society in selecting the one person most representative and most deserving of the honor.

Each member who has a candidate in mind should submit this name to the secretary of his component society. The nominee need not be a member of his society. He should be a member of The Kansas Medical Society. He should have an outstanding

record of medical practice and in addition should have rendered some notable service as a community leader. Each county society should then select the one Kansas doctor it would most wish to have honored in this regard and then send that nomination to The Kansas Medical Society. The committee will make its selection for Kansas. It will then supplement whatever information is available with other biographical material and submit that to the A.M.A.

The Kansas Medical Society sincerely believes that many Kansas physicians are worthy of this honor. It is also felt that enough has been done in this state to make it appropriate that a Kansas physician be selected. The success of this project, therefore, rests with the initiative of the county societies and their members, but these nominations must be received during the summer. This committee will be grateful for any that are sent in at any time.

THE 1959 RURAL HEALTH CONFERENCE

The House of Delegates of The Kansas Medical Society passed a resolution on May 5, 1955, recommending that the Committee on Rural Health study the possibility of having the National Rural Health Conference in Kansas in 1959.

There have so far been ten national conferences sponsored by the American Medical Association Council on Rural Health. Each was well attended by physicians, farm people, and educational and organizational leaders.

Rarely has a conference been held without a physician from Kansas on the program. The rural health program in Kansas, often referred to as the Kansas Plan, has won national recognition and has been of interest to the national conference because the success of the program was due to the active participation and cooperation of physicians and farmers.

More recently a great deal of interest has been shown in the preceptorship program, circuit courses offered by the University of Kansas School of Medicine, and continuation of the program to interest doctors to locate in areas where a shortage of health care exists.

At each national conference speakers who have gained recognition for their work in health present addresses on such subjects as "Farm and Home Safety," "Family Responsibility for Health," "The Use of Present Health and Medical Care Resources," etc. Informal discussions follow each presentation. A panel consisting of representatives of each profession in attendance at the conference answers questions and discusses problems relating to rural health.

In order to interest the Council on Rural Health of the A.M.A. in having its 1959 conference in Kansas, it will be necessary for physicians and representatives of farm organizations to put forth a joint effort, to point out the advantages of holding such a conference here. Then, should the A.M.A. accept the invitation, it will be necessary that the co-operation continue to assure the success of the gathering.

The year 1959 holds special significance for members of The Kansas Medical Society, for that will be the 100th anniversary of the founding of our group. It is also far enough in the future to permit an unhurried study of plans and programs.

Also, it would be fitting at any time for the national conference to be held here since Kansas is predominantly a rural state. It has much to offer those who are studying rural problems. Worthy of special note is Kansas State College, with curriculum and physical facilities for adequately training young farmers.

The Committee on Rural Health of The Kansas Medical Society earnestly solicits the help of all members of the Society in "selling" Kansas as the site for the 1959 conference.

COUNTY SOCIETIES

Members of the Geary County Society were hosts to the Golden Belt Medical Society at a meeting held at the Junction City Country Club on April 21. For the afternoon program Dr. Hubert M. Floersch, Kansas City, spoke on "Pruritus Vulvae" and Dr. Maurice H. Stauffer, of the Mayo Clinic, presented a paper on "Liver and Biliary Tract Problems." A dinner and business session followed the program.

The following officers were elected: president, Dr. Herbert L. Bunker, Junction City; vice-president, Dr. William R. Durkee, Manhattan; secretary-treasurer, Dr. R. Dale Dickson, Topeka.

Dr. Pratt Irby, Fort Scott, was speaker at a joint meeting of the Neosho County Society and its Auxiliary at the Tioga Hotel, Chanute, in April.

A dinner meeting of the Montgomery County Society was held at the Coffeyville Country Club, April 13. The doctors voted to offer their services to the county commissioners for mass immunization of school children against diphtheria, whooping cough, and tetanus.

A meeting of the Sedgwick County Society was

held at Wichita on May 10, and the program was a clinicopathological conference presented by Dr. W. P. Callahan, Jr., Dr. J. Philip Berger, Dr. Robert P. Norris, and Dr. Thor Jager.

A feature story about the Miami County Medical Society was published in a recent issue of the *Paola Western Spirit*.

Dr. George I. Thacher, Waterville, was host to members of the Marshall County Society and its auxiliary at a dinner at his home on April 18. Guests of honor were Dr. and Mrs. H. S. Haerle. Dr. Haerle is leaving soon for a two-year period of military duty.

A meeting of the Johnson County Society was held at Red Rock Inn, Olathe, on April 26. Dr. Herbert A. Wenner, research professor of pediatrics at the University of Kansas School of Medicine, reported on poliomyelitis vaccine.

Dr. Chester Young, chairman of the Public Relations Committee of the Wyandotte County Society, conducted a study of "Public Relations in the Practice of Medicine" at the society meeting held May 17. A business meeting followed.

A meeting of the Tri-County Medical Society, which is made up of physicians from Barber, Harper, and Sumner Counties, was held in Harper on April 20. The group adopted a resolution calling for the establishment of a Tri-County Health Department, staffed by a public health medical officer, public health nurses, and sanitarians. Community meetings are now being held in the three counties to acquaint residents with the proposal.

Members of the Labette County Society entertained their wives at a dinner meeting at the Parsons Country Club on May 11. Dr. Richard E. Bartman, staff psychiatrist at Parsons State Training School, spoke on mental health.

PUBLICATION ON POLIO

Parke, Davis and Company has announced plans for a new medical publication, *Polio Patterns*, to distribute up-to-the-minute information on incidence and distribution of poliomyelitis in major population centers throughout the United States. It will be mailed regularly to physicians.

The information will include epidemic, regional, seasonal, and population patterns of incidence and new data on research developments, prophylaxis, and treatment. The material will be compiled from information gathered from official sources in co-operation with the National Foundation for Infantile Paralysis.

Committees for 1955-1956

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Clinicopathological Conference

CASE PRESENTATION

The patient, a well developed, obese, white male, 56 years of age, was acutely ill and unresponsive when admitted to KUMC September 9, 1954, after having had convulsions during the previous 36 hours. This patient expired three days later.

Three months before admission, the patient had difficulty seeing well. He related this to his glasses, but his vision did not improve when they were changed. One month before admission he had suboccipital and generalized headache. Thirty-six hours prior to admission, a generalized seizure occurred which lasted about ten minutes. The seizure was associated with weakness of the left upper extremity. He was able to talk and responded well until twelve hours before admission, when he had another generalized tonic and clonic seizure, after which he became unresponsive and remained so until his death. A general seizure occurred eight hours prior to admission.

Three years prior to admission, the blood pressure was normal. One week before admission the blood pressure was 210 systolic. The patient had had no recent concussions or injuries.

Physical examination was normal. Temperature was 100.2° F., pulse 120, respiratory rate 24, and blood pressure 128/88. Optic discs were normal. On neurological examination, the eyes turned to the left. The pupils were equal and reacted well to light. There was a slight left central facial weakness, increased tone in the left upper and lower extremities, and bilateral positive Babinski responses. The patient would move all extremities on painful stimulation. Reflexes were present and equal bilaterally.

Laboratory examination on admission showed a urine having acid reaction, specific gravity 1.014, a faint trace of albumin, and no sugar. Microscopy of the urine showed rare pus and epithelial cells. The blood count showed a red blood count of 5,540,000 and white blood count of 22,000 with a hemoglobin of 16.2 grams. The differential count was 89 polys, all filamented, 8 lymphocytes and 3 monocytes. Blood chemistry showed non-protein nitrogen of 38.5, blood sugar 110 mg. per 100 cc., sodium 144 mEq. per liter, potassium 5.2 mEq./l., and chloride 108 mEq./l.

Five hours after admission the patient had a generalized seizure consisting of clonic movements of all extremities for 30 seconds, followed by clonic

movements of the left face, arm, and leg lasting one minute. The patient subsequently had two generalized seizures in the next 12 hours. On September 10, 1954, a right arteriogram was done. On September 11, 1954, a ventriculogram was made, followed by a left carotid arteriogram. The mental status of the patient remained about the same. Blood pressure varied from 122/88 to 160/90. Pulse varied from 100 to 120. The temperature ranged from 99.6 degrees to 101.4 degrees. Fluids were given by clysis. After the ventriculogram the patient's course was essentially unchanged until 11 hours later when the patient developed marked respiratory distress and expired.

Question: Did he have any nuchal rigidity?

Answer: No.

Question: Did his eyes remain deviated to the left?

Answer: No, they did not.

Question: Was there any associated turning of the head to the left?

Answer: Yes, I believe so.

Question: What were the spinal fluid findings?

Answer: We did not do one.

Question: Why did you do a ventriculogram?

Answer: I can tell you why we didn't do a spinal. When the right ventricle was tapped and we got back only one cc. of fluid, we decided against it.

Question: Concerning the change in glasses, was that by someone who might have examined the eye grounds?

Answer: No, I believe it was not.

Question: Was an electrocardiogram taken?

Answer: No, there was not.

Question: What was the diastolic pressure one week before admission?

Answer: We do not know. The blood pressure recorded for that time is what his wife reported.

Question: Did these seizures begin focally and then march or did they all begin at once?

Answer: The seizures in the hospital started as a generalized seizure and then became localized to one side.

Question: What was this man's occupation?

Answer: He was a farmer.

Question: Did you get any history of any of the animals on his farm or on nearby farms being sick?

Answer: I don't know.

Mr. Flowers (fourth year medical student)*: The first x-ray is a portable flat plate of the chest. As far as I can tell, the bony structure appears normal. The

From the University of Kansas Medical Center. Edited by Glen R. Shepherd, M.D., and Mahlon Delp, M.D., from recordings of the conference participated in by the departments of medicine, radiology, surgery (ENT), and pathology, and the third and fourth year classes of medical students.

* Received M.D. degree June, 1955.

definition is poor in the film. The heart does not appear grossly enlarged. From this film you can tell almost nothing about the lung fields. On the routine skull films, the bony skull appears to be within normal limits. The tables are not thickened. In the anteroposterior film, the pineal body is not visible. There appears to be no pathology in either the frontal or mastoid sinuses. The sphenoid sinus and sphenoid ridge appear within normal limits. The sella turcica is neither eroded nor enlarged. The posterior clinoid process appears normal. They appear to be normal skull films.

Dr. Germann (department of radiology): The right arteriogram was done, and we thought there was depression of vessels in the anterior cerebral artery. We were suspicious of a mass on the right side. Then the ventriculogram was done, and the shift was to the right. For that reason we thought we had the marker on the wrong side of the film, so we took the second films. Both were shifted in the same direction, so the shift of the ventricles was opposite to the expected shift. A second arteriogram was done at that time. Then we found that both sides showed the variation in the vessels that we had seen before; therefore, we assumed that it was a congenital variation.

The fact that the ventricular shift occurred opposite to what was to be expected is something we will hear about later, I expect.

Dr. Delp: The story seems simple but straightforward. An individual, 56 years of age, begins having difficulty in vision. I assume, although it has not been completely established, that he was having severe suboccipital headache and then convulsive seizures. The findings which seem to be tangible are those you heard by Dr. Germann.

DIFFERENTIAL DIAGNOSIS

Dudley House (fourth year medical student)*: The causes of convulsive seizures are many and varied, including idiopathic epilepsy; congenital malformations; trauma; infections (including parasitic, tuberculous, and syphilitic); sinus thrombosis; such intoxications as alcoholic, acidosis, and hypoglycemia; cardiovascular accidents; degenerative diseases; and tumors.

The lesions which can cause convulsions are narrowed down by two questions. First, where is this lesion? Second, what is the lesion? As far as locating the lesion is concerned, I must say that we have an irritating lesion and localizing signs are a weakness of the left upper extremity, conjugate deviation of the eyes to the left, and a left central facial partial paralysis. The only place I can locate this lesion would be on the right side in the posterior portion of the second frontal gyrus and over the motor strip.

This doesn't go along with the x-rays and ventriculograms.

Considering the causes, the rapid course, the high white count over 20,000 (and Harrison makes the statement that with white counts over 20,000 hemorrhage is the cause in the absence of infection), I would certainly have to think that this is a bleeding lesion which is spreading and producing the progression of symptoms.

Therefore, we have three possibilities which could occur in this area: inflammatory disease, vascular disease, or tumor. Of the inflammatory processes such as meningitis, sinus thrombosis, or brain abscess, we would expect a septic course. We expect either a history of trauma or of infection some time in the past. We would also expect nuchal rigidity. Of these I would think that brain abscess would be the one most likely to give localizing signs. Most textbooks make the statement that brain abscess can't be ruled out without a spinal tap. I am inclined to rule out these infectious diseases by the course of this patient's disease.

Neurovascular syphilis, generally speaking, is multicentric as is obliterative endarteritis. They are not likely to produce bleeding.

Tuberculoma or a gumma in this area are granulomatous lesions and would not explain the bleeding.

Considering vascular accidents which could occur here, subdural hemorrhage would have to be considered. It rarely produces three months of symptoms and then a sudden rapid course. Also, we have no history of trauma. Subarachnoid hemorrhage or a leaking from a ruptured aneurysm would certainly be expected to have an apoplectic course. I don't believe one would find any localizing signs which seem to be as discrete as we have here.

Cerebral thrombosis and embolus could be ruled out, although thrombosis is frequently associated with a fairly slow progression of symptoms. The incidence of coma following thrombosis is rare. Embolus usually is associated with fibrillation or some other source which we don't have here.

Cerebral hemorrhage, per se, if my localization of the lesion is correct, would have to involve either the pre-Rolandic or the Rolandic branch of the middle cerebral artery, which is an unusual site. About two-thirds of cerebral hemorrhages occur into the internal capsule. Such a cerebral hemorrhage could explain the signs and the progress of symptoms which we do have.

Postulating such a cerebral hemorrhage requires explaining the three-months onset of failing vision and the one month of headache on the basis of hypertension and hypertensive encephalopathy. The headache is suboccipital in character, which is fairly common with hypertensive headache. I believe this

* Received M.D. degree June, 1955.

would be a possibility but certainly not my first choice.

Considering the tumors in this area, the angiomas and meningiomas can be ruled out on radiographic evidence and by the fact that they are benign and not apt to hemorrhage. The metastatic tumors are about one-tenth as common in this area as are primary gliomas. Also, we have no source for a metastatic tumor. This leaves me with the gliomas, of which the one occurring in the oldest age group is glioblastoma multiforme, with an average age of 40. It has a rapid course of six to nine months. It is a tumor which is characterized by hemorrhage and cystic degeneration.

Therefore, my diagnosis is glioblastoma multiforme, and I say this with not too much confidence, in the right frontal middle convolution involving the motor strip. I believe the terminal event can be explained either by cerebral edema or increased intracranial pressure, causing an uncinatal herniation or just embarrassment to the respiratory center. There is an outside possibility that this patient developed bronchopneumonia as a result of the comatose state.

Dr. Delp: Dr. Bracket, you saw this patient September 10, 1954. What did you think?

Dr. Bracket (neurosurgeon): I'll tell you before I begin that the clinical diagnosis was a right cerebral glioblastoma multiforme located as House described.

We had virtually no past history, and what we do have is certainly shaky. But here is a patient who has in his history three months of failing vision, one month of headache, and then convulsions, which are focal in part, and the convulsions are followed first by weakness on the left side and then by increased tone on the left side. I believe the signs would all point to an expanding lesion in the right hemisphere. The most likely possibility would be a glioblastoma multiforme with hemorrhage into the tumor as a precipitating factor in the man's death.

Dr. Delp: Now what about your diagnostic work-up, Dr. Bracket? You used arteriograms and ventriculograms. Did they help you at all? Were they satisfactory?

Dr. Bracket: Yes, they were satisfactory. The first arteriogram which was done on the right did show what we considered to be depression of the anterior cerebral artery. We thought this was consistent with the patient's history. However, it did not give sufficient localization to permit surgery, so the ventriculogram was performed. After the ventriculogram was carried out and the ventricle on the right contained only one cc. of fluid, more air was injected and fluid removed because we were in a tight situation. The ventriculograms did show that the anterior portion of the ventricular septum was shifted to the right, toward the side on which we expected the lesion. Therefore, the left carotid arteriogram was carried out, showing a depression of the left anterior

cerebral artery essentially similar to that which we had seen on the right.

Dr. Delp: Dr. Stevenson, do you see anything in this case which would throw any light on the diagnosis?

Dr. Stevenson (neurology): No, I would have to speculate. I was rather curious that this man remained unconscious for such a long time in the absence of any fever. We usually would expect that patients would come around a little bit between such widely spaced attacks if they have lesions well out in the cortex.

I can't explain that unless he had more to his disturbance than just a cortical lesion. Also, the business of which way his head and eyes turned and whether they were turning that way only during seizures would be another thing if he had a right-sided lesion accounting for left-sided symptoms. If that had been a destructive lesion, his eyes would have deviated to the right, not to the left. During seizures he should have had left-sided deviation along with left-sided weakness, but not anything you would consider as serious. I couldn't make a diagnosis on this man.

Dr. Delp: This patient did have electroencephalograms done, which are reported as abnormal electroencephalograms showing predominately right-sided dysfunction.

Dr. Steegmann (neurology): I want to say that if I had no more information than what is given here, I think I would put this lesion on the same side. First of all, with the deviation of the eyes and the weakness, it would indicate a destruction and a mass. Having the weakness of the left arm and leg only after a seizure would mean that the brain which was already swollen had simply pushed the peduncle over against the incisura of the tentorium following the seizure, and therefore he had a homolateral weakness rather than a contralateral weakness. In other words, it would be possible to explain the clinical picture from a left-sided lesion rather than assuming that you have signs here which do not make sense. That is a deviation of the eyes toward the left and at the same time a left-sided weakness.

PATHOLOGY REPORT

Dr. Mantz (pathologist): It appears that the consensus of opinion here favors a space-taking intracranial lesion as the cause of the patient's signs and symptoms. Unfortunately, it will not be my privilege this morning to demonstrate such a lesion.

That signs suggesting intracranial lesions may occur in the absence of such space-taking phenomenon has been a problem of speculation, at least sporadically, by neurologists for many years. I would like to preface my comments in this case by reminding you that as early as 1893, Quinke, in Germany, accumulated quite a series of patients all showing evidence of rather marked increased intracranial pressure without

aberration of the spinal fluid and in whom no evidence of tumor could be found. In 1904, Nonne was able to cull from this group a subsegment of individuals whose symptoms were more insidious and were often associated with localizing signs. In these he likewise was unable to show evidence of neoplasm or other space-taking lesion. As a result he coined the term "pseudotumor cerebri" to cover this situation. The etiology of this, for the most part, is little understood.

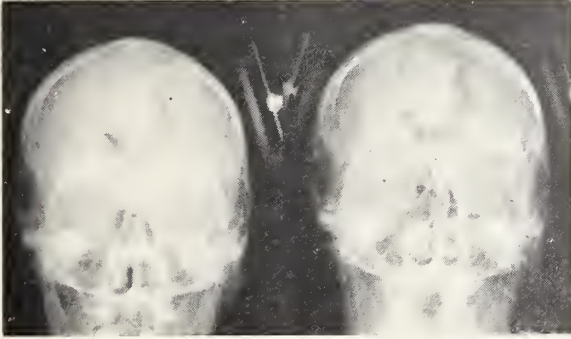


Figure 1. Films of ventriculogram, anteroposterior, showing depression of left anterior horn of lateral ventricle and shift of ventricles to right.

It is in the hope that we may demonstrate one cause for such a situation that we are happy to present the findings in this case today.

The external examination of the body disclosed a moderately obese individual who showed no evidence of trauma or other external evidence of disease. As you have surmised, the principal abnormality was present within the central nervous system.

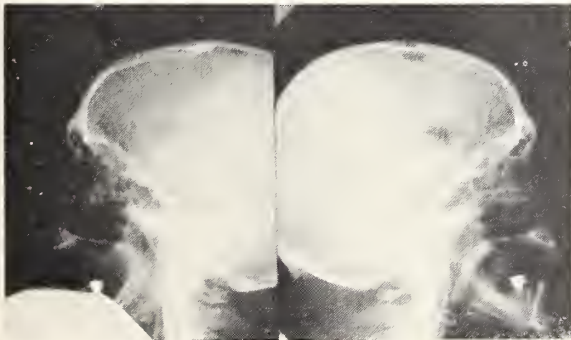


Figure 2. Carotid arteriograms, right and left, showing symmetrical arterial pattern with anterior cerebral arteries depressed on each side.

The brain was moderately enlarged and appeared edematous throughout, weighing 1,580 grams. There was a moderate amount of extravasated blood within the subarachnoid space over both lateral hemispheres. The cerebral convolutions were flattened. The veins on the surface of the brain were markedly engorged with blood and some were thrombosed.

A section through the parietal lobes at the anterior and midthalamic level showed rather symmetrical v-shaped hemorrhages extending from the cortex to-



Figure 3. Gross section through parietal lobes of the cerebral hemispheres, showing v-shaped cortical hemorrhages extending to the lateral ventricle on the right side and occlusion of the superior longitudinal sinus by a thrombus. Bilateral uncus pressure cones can be seen.

ward the ventricles. The cerebral substance adjacent to the hemorrhage was the site of marked hemic discolorations.

It should be emphasized that the hemorrhages followed almost identically the track of the needle used in ventriculography. So we must assume that this represents a complication of this diagnostic procedure superimposed upon some process which apparently was occurring within the cerebral substance in this region.

There was no significant dilatation of the ventricular system. Moderate amounts of blood were contained within the lateral ventricles, presumably derived from the parenchymal hemorrhage.

I would like, particularly in the light of the excellent comment by our discussants, to point out that the uncus of either temporal lobe had herniated down through the incisura of the tentorium. This could have compressed the cerebral peduncles and contributed to the motor symptoms this patient exhibited.

The most important and significant feature was a total occlusion of the superior longitudinal sinus by

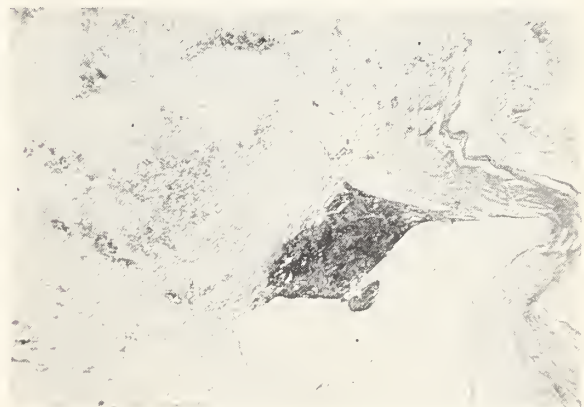


Figure 4. Photomicrograph of the posterior portion of thrombosed superior longitudinal sinus, showing organization and recanalization of thrombus. The sinus wall is not inflamed and no other defects are seen.

an extensive thrombus which occupied its entire length. In the posterior half, the thrombus was relatively dry, organized, and obviously rather old. In the anterior portion, it was quite recent, being composed of an abundance of well preserved clotted blood. I believe one may assume the thrombosis in this area to be of three days' duration, explaining the exacerbation of symptoms.

Sections obtained from the sinus showed no primary disease within its wall to account for the contained thrombus. The orifices of several of the emissary veins were occluded by a similar process.

Random section from many sites in the cerebral cortex contained scattered hemorrhages, the majority of which were perivascular. This presumably reflects the severe degree of destruction which had resulted from the sinus thrombosis.

In the area of the needle track, we noted that these hemorrhages had become confluent. From this it may be concluded that ventriculography merely accentuated a process previously in progress.

Scattered throughout the brain in all areas was evidence of cerebral degeneration with some disappearance of ganglion cells, some increase in glial elements, and changes suggestive of edema.

Initially we were at a loss to explain why this patient had such a clear-cut history of visual disturbance which we could not account for on the basis of papilledema or vascular alterations in the ocular fundi. Study of the optic nerves, chiasm, and optic radiation was totally unrewarding. Careful examination of the calcarine cortex within the occipital region, however, may have shed some light on this important symptom. This suggested rather extensive neuronal degeneration associated with an increase in the number of glial cells.

The remainder of the examination was of no assistance in elucidating further the basic nature of the patient's illness. For the record, however, there was rather extensive pulmonary atelectasis with mild interstitial pneumonitis. The liver was relatively large

and showed a significant degree of fatty metamorphosis. No further abnormalities were found.

The disease we have attempted to portray was essentially that of a superior longitudinal sinus thrombosis which began in the posterior portion and terminally extended anteriorly. This was associated with extensive intracerebral hemorrhage and ultimately resulted in death due to increased intracranial pressure. The etiology of this process is obscure.

It is generally conceded that the majority of such thromboses are secondary to disease elsewhere in the body, primarily within the nasal sinuses and internal ear. Exploration of these structures in this case was totally unrewarding.

Primary or idiopathic thrombosis of the sinus may occur also as a complication of systemic disease, and it is not seen too uncommonly in wasted and debilitated individuals. Carcinoma of the pancreas, polycythemia, and blood dyscrasias may predispose to this condition. It has been described in cardiac failure, presumably on the basis of slowed circulation. None of these features were present in this case, and we must conclude that the pathogenesis and etiology are unknown.

The association of superior longitudinal sinus thrombosis with signs and symptoms suggesting tumor is not frequently encountered. Textbooks tell us that sinus thrombosis is usually associated with some rather characteristic manifestations about the face and scalp. In particular, longitudinal sinus thrombosis usually produces rather marked distention of the veins of the scalp, forehead, and about the nose. It is frequently noted that the veins of the retina show evidence of marked distention and disintegration. These were absent in this case. It is stated by some, on the other hand, that the diagnosis is difficult since localizing signs may be absent in as many as 50 per cent of autopsy proven cases.

Recognizing this fact, Ray and Dunbar concluded that sinus thrombosis might be a factor in some patients clinically suggesting an intracranial neoplasm but who, on further study, failed to show that such existed. They devised a means whereby the superior longitudinal sinus could be injected with radiopaque material. They were able to demonstrate sinus thrombosis in four patients with otherwise unexplained elevation of intracranial pressure.

In summary: We have interpreted this case as an instance of pseudotumor in which the basic and fundamental process was that of spontaneous idiopathic thrombosis of the superior longitudinal sinus.

Dr. Delp: Dr. Proud, can you offer us any ideas concerning the pathogenesis of this case?

Dr. Proud (ENT chairman): No, I have seen a few cases of this before, but invariably they originated from a middle ear infection, into the sigmoid sinus, then to the lateral sinus, then back to the

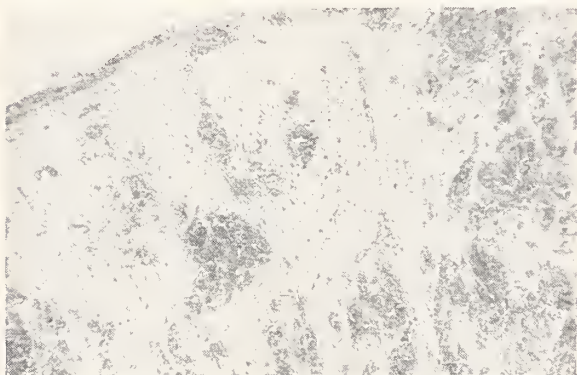


Figure 5. Photomicrograph of the right frontoparietal region of brain, showing "red degeneration" characterized by many scattered perivascular hemorrhages of recent origin.

torcular Herophili, and then up to the longitudinal sinus. It was invariably associated with death. I have never seen a lateral sinus thrombosis extending just to the torcular Herophili.

Perinasal sinuses, as suggested by our discussant, can produce infection and thrombosis. Infection of the face can do likewise, as can debilitating diseases.

I have never before seen an idiopathic case, such as this. The veins of the sinuses for the most part have dependent drainage. When a perinasal sinus produces a superior longitudinal sinus thrombosis, it usually comes from the frontal sinus. There is a frontal vein which may pass through the foramen cecum, which is just anterior to the crista galli and communicates with the frontal sinus vein which passes directly into the superior longitudinal sinus. It is pretty rare coming from any other perinasal sinus. I understand that all his sinuses and ear sinuses were completely negative.

Dr. Delp: Dr. Williamson.

Dr. Williamson (neurosurgeon): Before I make any remarks, I would like to give Dr. Bracket an opportunity to say exactly what went on during ventriculography as I think those findings are pertinent to the case.

Dr. Bracket: Since the right ventricle was tapped without difficulty and only one cc. of fluid was obtained, five cc. of air was injected. Then the left ventricle was tapped. As we passed the needle, blood began to flow rather briskly. After some consideration the needle was removed and the ventricle was re-entered, whereupon clear spinal fluid and a puff of air was obtained. More air was instilled.

I may say that the brain was under high pressure when the dura was first opened on the left side.

Dr. Williamson: Do you want to enlarge upon what you thought after all these studies with both ventricles down and a glob of air along the needle track and why we didn't operate on this patient?

Dr. Bracket: First, I thought the patient's brain was shifted to the right due to trauma and hemorrhage produced by the ventriculography, which I did not think was of sufficient size to require craniotomy. Second, I did not know what the patient's pathology was. Third, not knowing that, I did not know what to do to relieve it.

Dr. Williamson: I think that is a pertinent remark, because that is exactly where we all were. I must also say that I think Mr. House did an excellent job and made the same diagnosis we did. We thought the lesion was not only on the right side but, with the ventriculograms, probably had invaded through the corpus callosum to become bilateral, which can occur in glioblastoma.

We had some evidence to believe that at least the right hemorrhage could have been present before ventriculography, because the first arteriogram showed

what might have been hemorrhage, and we saw depression of the anterior cerebral artery.

I have no doubt that shoving the needle through a brain with petechial hemorrhages throughout, which you saw on those slides, was followed by prolonged rapid degeneration of devitalized tissue. This is not uncommon when you do biopsy to prove the type of tumor.

So, the diagnosis was not apparent preoperatively. Can it be diagnosed preoperatively? Yes. One thing which would have proved the diagnosis would have been an attempt to visualize the cortical veins and sagittal sinus. This can be done deliberately by two methods. One is by using the Fairchild camera we have here and getting serial films on the arteriogram, so that a film is taken every one-half second. The dye is traced through the arteries, capillaries, veins, sagittal sinus, and on out. We have been using that camera for the past few months and we are still having technical problems with it. It hasn't proved satisfactory in sick people because the head has to be still for about four to five seconds with repeated films. This man was critically ill without any suspicion on our part of anything wrong with the sagittal sinus. So we didn't use the Fairchild camera and had no films of the venous drainage of his brain. Had we suspected such a lesion and used that technique, we might have had the diagnosis.

The second method of visualizing the sinus we have also used here, on Dr. Bronson Ray's suggestion, in so-called serous meningitis or in these cases with pseudotumor. That is actually trephining over the sagittal sinus, opening it up, injecting the dye, and taking the pictures.

This case is not the usual picture of pseudotumor cerebri. Since Dr. Bronson Ray's latest paper came out, a number of sinograms have been done in such patients and the sagittal sinus has not been thrombosed in many of them. In fact, perhaps only one out of ten has proved to be thrombosis of the sagittal sinus. So we are still looking for the cause of so-called pseudotumor cerebri.

I am sure that some cases of cortical venous thrombosis do survive and do not go on to death, because such complications are recorded in pregnancy. In one of the latest journals of neurology, eight patients with venous thrombosis who survived were reported. This is not uncommon in pediatrics after delivery of a child.

Had we known what this man had, I still wouldn't have known how to treat him.

Dr. Steegmann: I would like to make one comment. Red softening is often known to follow venous thrombosis of the sinuses. You have two separate veins, one that drains into the sagittal sinus and the other system of veins in the brain that drain into the straight sinus. Now when you get thrombosis of the

deeper set of veins, you have bilateral red softening of the thalamus and of the caudate nucleus. Some of these patients resemble those having encephalitis. They have high protein in the spinal fluid, xanthochromic fluid, and increased cells. They display clinically the stupor or lethargy of an encephalitic.

I think it should also be pointed out that the red softening, so-called, is much more common in children. In other words this venous sinus thrombosis is much more common in children than in adults, and thus pediatricians are often much more aware of this sort of picture than are people who treat adults.

If the sagittal sinus is thrombosed, then the red softening is likely to be cortical rather than of the deeper structures. Various types of focal neurological signs occur on the basis of thrombosis of the tributary veins that drain into the sinus, with a rather massive softening, so-called red softening.

Now red softening can occur in arterial lesions, but every neuropathologist is aware of the treatment of these venous thromboses when followed by an irritating type of cerebral hemorrhage.

Dr. Delp: Dr. Williamson, do you classify this as a rare sort of lesion?

Dr. Williamson: Idiopathic primary sagittal sinus thrombosis is very rare. I have seen only one other case, and this is the first one I have seen at the University of Kansas Medical Center in the last ten years.

Dr. Delp: Then intravenous thrombosis with pseudotumor signs is rare?

Dr. Williamson: Something similar is not rare. I think for a while it was endemic here in Kansas City. We saw a few here in March. It seems to me we had six in the house at one time. These were people who came in with high papilledema, who had no localizing signs, who were in good health, and were neurologically negative. They did not have convulsions. They were sent to us by eye men because of failing vision and choked discs. Some of these were secondary to ear disease. So-called otitic hydrocephalus has been one of the labels applied to this.

We saw a lot of them here, and we wondered whether or not this was a viral infection. We sent out spinal fluid on four or five of them in the house at one time. They are still trying to track down one of the viruses that came from one of our ladies since the mice injected all died. All others were negative. I do not believe those people had sagittal sinus thrombosis. We did sinograms on two or three, and then we dropped it because it did not show us anything. They all survived.

Miller (fourth year medical student): In sagittal sinus thrombus, is papilledema an exception rather than the rule?

Dr. Williamson: I have not seen enough to know. I would think that if they survived long enough,

they would get papilledema as they would certainly have increased intracranial pressure and venous congestion, which would produce it. This man did not live long enough for that.

Dr. Mantz: If I may quote literature, papilledema is the rule rather than the exception.

Three out of four traffic accidents happen in clear weather on dry roads.

Death Notices

LAWRENCE WALLACE CAZIER, M.D.

Dr. L. W. Cazier, 64, a member of the Pottawatomie County Medical Society, died at his home in Wamego on April 10. He had practiced there for more than 30 years. Dr. Cazier was a graduate of the University of Kansas School of Medicine, completing his work there in 1920 and receiving his Kansas license the same year.

FRANK L. DEPEW, M.D.

Dr. F. L. DePew, 77, an honorary member and former officer of the Elk County Society, died at a Colorado Springs hospital on April 24. He was graduated from Keokuk Medical College in 1898 and practiced in Iowa before moving to Howard, Kansas, in 1905. He continued to practice there until he suffered a stroke in 1952, except for a period during World War I when he served in the Army medical corps. He was the first commander of the Howard American Legion post.

JULIUS ANTHONY BURGER, M.D.

Dr. J. A. Burger, 64, an active member of the Wyandotte County Society, died at a Kansas City hospital on May 3 after an illness of nine months. He had practiced in the Armourdale district in Kansas City for 31 years, moving to Shawnee after the 1951 flood destroyed his home and office. Dr. Burger was graduated from St. Louis University School of Medicine in 1919.

Dr. and Mrs. Burger had received national renown for their success in rearing 14 children, one of whom, Dr. Paul B. Burger, recently returned from military service and began practice with his father.

ACTIVITIES OF MEMBERS

Dr. Philip W. Morgan was speaker at a recent meeting of the Emporia Forum Club. His subject was "Advice to the Cardiac Patient and His Family."

Dr. John L. Fatland, who has been practicing in Council Grove for two years, has accepted a four-year residency in urology at the University of Iowa hospital.

Dr. R. Bruce McVay, Clay Center, addressed the Lions Club in that city recently. His subject was "Alcoholism" and he showed a film on that topic.

Dr. A. R. Cuadrado, who recently began practice in Colby, has announced that he will maintain office hours in Selden on Saturday of each week.

Dr. Alfred M. Tocker, Wichita, was speaker at the April meeting of the Montgomery County Heart Association. "Recent Developments in Heart Surgery" was his subject.

Dr. Murray C. Eddy, Dr. Joseph I. Mossberger, Dr. Lloyd W. Reynolds, and Dr. A. M. Cherner, all of Hays, were speakers at a meeting of the Seventh District Hospital Association held at Hays recently.

Three physicians were recently named as health officers of their respective counties: Dr. Clarence E. Thompson, Holyrood, Ellsworth County; Dr. Edward C. Petterson, Plainville, Rooks County, and Dr. James H. Coffman, Oberlin, Decatur County.

Dr. Quinton D. Conklin, who has been serving for two years with an Army surgical hospital in Germany, has been released from the service and will resume his practice in Abilene.

Dr. F. Giles Freeman, Pratt, spoke on "First Aid" before the April meeting of the Woman's Auxiliary to the Pratt County Medical Society.

Dr. Frank W. Foncannon, Emporia, has moved to Wilmington, California, to practice industrial surgery in association with two other physicians. For 70 years a member of the family has practiced in Emporia, and Dr. Foncannon represents the third generation in the practice of medicine.

Dr. V. E. Chesky, chief surgeon of the Hertzler Clinic, Halstead, was awarded a certificate of meritorious service by the American Goiter Association at a meeting held in Oklahoma City on April 30. The only other such award was made to Dr. J. H. Means, professor emeritus of clinical medicine at Harvard University.

Dr. Donald D. Dieter, Salina, has been recalled to active duty with the Army medical corps. He reported for assignment at Fort Sam Houston on May 9.

Dr. Thomas L. Foster, Halstead, spoke on "It's the Little Things That Get Us" before a meeting sponsored by the Reno County Mental Health Association at Hutchinson on May 5.

Dr. Francis E. Bishop, who practiced in Atwood six years before joining the research staff of Charles Pfizer and Company in New York a year ago, has announced plans to open an office in Russell.

Dr. J. Cotter Hirschberg, Topeka, was speaker at a dinner meeting sponsored by the Wyandotte County Mental Health Association and the Kansas City Soroptimist Club on May 3 in Kansas City. His subject was "Strengths and Weaknesses in Present Day Family Life."

Dr. Charles DeHaan, who has practiced in Pretty Prairie for two years, has announced plans to move to Wichita to practice there.

April 25 was designated "Francis Nash Day" by the Kansas City Optimist Club to honor Dr. Nash for his services to the club and the city.

Dr. Robert M. Knox, Manhattan, has announced plans to move to Des Moines to practice in association with a clinic group.

Dr. Richard F. Looker, Wichita, recently became a diplomate of the American Board of Pathology.

Dr. Robert W. Blackburn, Council Grove, was recently appointed coroner of Morris County.

Dr. Richard F. Schneider, Kansas City, spoke on mental illness before 150 members of the Kansas City Association of Churches last month.

Dr. Mary J. Blood, Wichita, has successfully completed the examinations of the American Board of Pediatrics.

Dr. Robert C. Hull, who has been practicing in Burrton for three years, closed his office there on June 1 to begin a residency in psychiatry at Winter VA Hospital, Topeka.

Dr. A. C. Eitzen, Hillsboro, was speaker at a recent meeting of the Morris County Council of Women's Clubs at Dunlap.

A feature story about Dr. George M. Gray, 99-year-old physician of Kansas City, was published in the May 6 issue of the *Wichita Eagle*.

Dr. Henry Laurens, Jr., Salina, was recently appointed to the Committee on Training of Gastroscopists in Esophagoscopy by the American Gastroscopic Society.

Dr. J. C. Sherrard, who has practiced in the Norway community for 50 years, was guest of honor at a basket dinner and program at Norway on May 22. This year Dr. Sherrard is also completing 50 years of membership in the Masonic Lodge of Scandia and the Elks Club of Concordia.

Dr. O. S. Walters, Topeka, was speaker at a mental health institute held at Goessel on May 6 under the auspices of Prairie View Hospital.

Dr. J. A. Simpson, who began practice in Salina in 1905, was the subject of a feature story in the *Salina Journal* on May 15. In years of service, he is the oldest physician in Salina.

Dr. Millard E. Schultz, Russell, was recently named coroner of Russell County.

Dr. Edward J. Grosdidier, Kansas City, received an honorary degree of doctor of laws from St. Benedict's College, Atchison, at commencement exercises on May 25.

Dr. H. Wallace Lane, former city-county director of health in Kansas City, will resume his duties there on July 1. Since May of 1953 he has been serving in the Army medical corps.

Dr. Edward M. Burrell has announced plans to close his office in Turon.

Dr. Earl R. Beiderwell, Leoti, announces that Dr. Thomas M. Cable is now associated with him in practice. Dr. Cable, a graduate of Western Reserve Medical School in Cleveland, has recently been located in South Carolina.

Dr. William J. Reals, Wichita, described the profession of medical technology before high school and college students in Dodge City recently at a forum held at St. Mary of the Plains College.

SCHOLARSHIPS FOR MEDICAL STUDENTS

Scholarships for students who are graduates of high schools in Butler County will be available at the University of Kansas School of Medicine for the first time this fall under the terms of the will of the late Dr. C. E. Boudreau of El Dorado. Awards will be made on the basis of financial need and scholastic achievement. Selection of students will be made by the University of Kansas Endowment Association from nominations made by the medical staff of the Susan B. Allen Memorial Hospital, El Dorado.

Dr. Boudreau's bequest consists of 112 shares of Standard Oil Company of New Jersey common stock and 520 shares of Republic Steel Corporation common stock, valued at approximately \$55,000. Only the income from the fund will be used, according to terms of the will.

A further provision states that if income from the investment provides funds in excess of the amount necessary for scholarships for qualified students from Butler County, students from other Kansas counties may benefit.

SOVIET PROPAGANDA TO PHYSICIANS

Numerous physicians throughout the country recently received a mimeographed publication called *American Soviet Facts*, containing 21 half-pages of "up-to-date information" on "Health and Medical Care in the U.S.S.R." The material is published by the National Council of American-Soviet Friendship, 114 East 32nd Street, New York 16, New York, one of the leading Communist propaganda agencies in the United States.

As a safeguard against any suspicions of Communist sympathies, the A.M.A. suggests, physicians who wish to keep the record straight should write the publisher requesting that their names be taken off that organization's mailing list. A carbon copy of the letter should be sent to the nearest office of the Federal Bureau of Investigation or to the F.B.I. in Washington, along with propaganda material received. This precaution is advised because records are kept of persons receiving Communist literature for any considerable length of time.

Official Proceedings 96th Annual Session

FIRST SESSION, HOUSE OF DELEGATES

The first session of the House of Delegates at the 1955 annual meeting was held at the Bisonte Hotel, Hutchinson, on Tuesday evening, May 3. Dr. Murray C. Eddy, Hays, president, conducted the meeting. The voting strength reported by Dr. A. W. Fegtly, Wichita, sergeant at arms, was 115, there being present 81 delegates and alternates and 29 officers, councilors, and past presidents.

Before starting the business of the evening the president introduced Mrs. Elizabeth E. Peck of Detroit, president of the Michigan State Medical Assistants' Society, who outlined educational programs for medical assistants sponsored by her organization.

Dr. Charles E. Vestle, Humboldt, chairman of the Reference Committee on Reports, summarized councilor and committee reports published in the April issue of the JOURNAL and moved their acceptance. All were approved. He then introduced resolutions designed to enact committee requests.

Supplementary reports were given by Dr. Lloyd W. Reynolds, Hays, for the Blue Shield Fee Committee; Dr. L. S. Nelson, Jr., Salina, for the Committee on Medical Economics; Dr. James B. Fisher, Wichita, for the Committee on Medical Schools.

Dr. W. Clarke Wescoe, dean of the University of Kansas School of Medicine, spoke briefly on the need for contributions to the school.

The annual report of the chairman of the Editorial Board of the JOURNAL was presented by Dr. Orville R. Clark, Topeka. A bound copy of the issues published in 1954 was presented to Dr. Clark as a token of appreciation for his services as editor. His report is published elsewhere in this issue.

Then followed reports by Mr. Oliver E. Ebel, executive secretary of the Society, and Mr. Rueben M. Dalbec, executive assistant.

Dr. James A. Butin, Chanute, constitutional secretary, reported that the Society now has a membership of 1,843. The total is made up of 1,320 paid members, 155 honorary members, 31 service members, 35 members on leave of absence, and 302 delinquent members. This is a gain of 19 members over 1954.

The treasurer, Dr. John L. Lattimore, Topeka, summarized the auditors' preliminary report covering the period from May 1, 1954, to May 1, 1955.

Kansas' two delegates to the American Medical Association, Dr. L. S. Nelson of Salina and Dr. George F. Gsell of Wichita, presented brief reports. A guest at the meeting, Dr. James R. McVay of Kansas City, Missouri, a member of the Board of Trustees of the A.M.A., urged co-operation between the various states and the A.M.A.

Dr. Eddy gave a brief presidential report, and

Dr. John M. Porter, Concordia, also addressed the House.

When the president called for new business, resolutions were introduced by Dr. Vestle; Dr. Clyde W. Miller, Wichita; Dr. James E. Hill, Arkansas City, and Dr. Glen Floyd, Winfield; Dr. Floyd C. Taggart, Topeka; Dr. Philip W. Morgan, Emporia. All were accepted for consideration at the second meeting of the House.

Dr. Thomas R. Hood, Topeka, director of the Kansas State Board of Health, introduced a discussion on Salk vaccine. The House felt that distribution of the vaccine should be under the control of county societies.

After discussion of plans for future meetings of the Society, the House approved a motion that a committee composed of the president, the president-elect, the constitutional secretary, and the executive secretary discuss locations for meetings for 1956, 1957, 1958, and 1959.

Dr. Eddy gave a résumé of his conferences with Governor Fred Hall with reference to appointments to the Kansas State Board of Medical Registration and Examination. The House took no action on the matter.

The president closed the meeting with announcements.

SECOND SESSION, HOUSE OF DELEGATES

The second meeting of the House of Delegates of the 96th annual session was held at the Baker Hotel, Hutchinson, at 12:30 on Thursday, May 5, 1955. The president, Dr. Murray C. Eddy, Hays, called the meeting to order and asked for a report from the sergeant at arms, Dr. A. W. Fegtly, Wichita. Dr. Fegtly reported a quorum in attendance.

Dr. Lucien R. Pyle, Topeka, chairman of the Reference Committee on Resolutions, read a resolution on adoption of councilor reports. It was unanimously approved.

Also approved was a resolution from the Committee on Allied Groups designed to further interprofessional co-operation by (1) county society meetings with dentists, hospital representatives, nurses, pharmacists, and veterinarians; (2) establishment of county interprofessional councils, and (3) county society activities coordinated with state society activities through the executive secretary of the Society.

Dr. Pyle reported that his committee approved the request of the Committee on Anesthesiology that an anesthesiologist be invited to speak at the 1956 annual session. He read a resolution inviting the Committee on Anesthesiology to supply a list of suggested speakers to the host society program chairman, and

the resolution was approved. The House also adopted a resolution defining operating room deaths as problems of the staff of the hospitals in which the incidents occur and approving the desire of the Committee on Anesthesiology to survey such incidents.

A resolution resulting from the report of the Committee on Constitution and Rules was approved by Dr. Pyle's committee. The House also acted to approve, and the following amendment to the by-laws was adopted:

By-Laws, Chapter VI, Section 1—Election of Officers. This section shall be amended in Lines 9, 10, and 11 to read as follows: "No past president may serve on more than two consecutive annual nominating committees, and no past president currently holding an elective office shall be eligible to be elected to the committee."

A second suggested amendment to the by-laws, setting the term of office of committee members at three years, was rejected by the House on the suggestion of the Reference Committee.

Dr. Pyle reported that the committee had amended a resolution introduced at the first meeting of the House for the Committee on Endowment. The House approved the resolution as amended. It provided that physicians individually contribute to the state medical school and that the Committee on Endowment outline a plan for increasing contributions to the fund for medical education and present its outline to the Council for review.

The first resolution reported for the Committee on History provided that The Kansas Medical Society appropriate a sum of \$2,700 (\$900 a year for each of three years) to subsidize a graduate student in history at the University of Kansas in writing a book-length thesis on "A Century of Medicine in Kansas." The House approved the resolution, and also approved a second resolution providing for an increase in dues of \$5.00 per member in 1958 to provide funds for publishing the book.

Three resolutions introduced for the Committee on Mental Health were approved. The first authorized the committee to co-operate with the Legislative Council in the preparation of bills relating to mental health for presentation to the 1957 session of the Kansas legislature. The second approved the objective of providing more community mental health facilities in the state. The third provided for continuing education in the field of treatment of alcoholics through pamphlets, lectures, seminars, reprints, and publication of pertinent articles in the JOURNAL.

For the Committee on Public Relations, the House approved establishment of a Code of Co-operation through conferences with editors and with managers of radio and television stations in Kansas. The House also approved exploration of a plan for establishing sustaining programs and news releases, and asked

the Committee on Public Relations to make such a study and report its findings to the Council.

Next considered was a resolution for the Committee on Rural Health, providing that an invitation be extended to the American Medical Association to hold its 1959 National Conference on Rural Health in Wichita. This was approved unanimously.

Dr. Pyle reported that his committee, after study of a resolution proposing a Blue Shield \$6,000 income service plan, felt that further study is necessary at the county society level before action is taken. The committee recommended that the subject be thoroughly explored until a representative informed opinion can be obtained. The House approved that recommendation.

A resolution introduced for the Committee on Medical Economics provided that a group life insurance plan for members of the Society be adopted. In his Reference Committee report, Dr. Pyle recommended that a survey be made to determine interest in such a project and that the Council take action after reviewing the results of the survey. The recommendation was approved.

A resolution introduced for the Committee on Medical Schools, providing for a study of codes of press relations for the University of Kansas School of Medicine, was rejected by the House, on the recommendation of Dr. Pyle's committee, since the matter had been covered by a similar resolution previously adopted.

A second resolution for the Committee on Medical Schools, providing for the collection of \$25 in additional dues or assessment from each member of the Society for contribution to the University of Kansas School of Medicine, was rejected by the House since such action would require an amendment to the Constitution and By-Laws of the Society.

Next considered was development of a project for education of medical assistants. The House authorized the Committee on Medical Assistants to outline such a project for presentation to the Council, and it authorized the Council to implement the project if the plan presented appears to be of value.

Dr. Pyle reported that the Reference Committee endorsed the principle of a resolution pertaining to the A.M.A. Code of Ethics but wished to submit a substitute resolution. The substitute resolution, printed below, was approved by the House:

WHEREAS, Section 8, Chapter I of the A.M.A. Code of Ethics, as recently revised, denies to physicians the right to dispense drugs, one of their privileges and duties from time immemorial, and

WHEREAS, this restriction of his rights is not justified and is not in the interest of either the public or the physician, and

WHEREAS, Section 8 further denies to physicians the right to ownership of a pharmacy if they so de-

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1. Ruffin, J. M.; Baylin, G. J.; Legerton, C. W., Jr., and Texter, E. C., Jr.: Mechanism of Pain in Peptic Ulcer, *Gastroenterology* 23:252 (Feb.) 1953.

2. Schwartz, I. R.; Lehman, E.; Ostrove, R., and Seibel, J. M.: A Clinical Evaluation of a New Anticholinergic Drug, Pro-Banthine, *Gastroenterology* 25:416 (Nov.) 1953.

SEARLE

sire, one of the constitutional rights of any American citizen, and

WHEREAS, this restriction of his rights is not justified and is not in the interest of either the public or the physician, and

WHEREAS, Section 8 further denies to physicians the right to a fair and reasonable profit in the providing of remedies to patients, and

WHEREAS, this restriction is contrary to every sound economic principle in the system of free enterprise, and

WHEREAS, these provisions in Section 8 imply on the part of our A.M.A. leadership, a lack of faith in the integrity of the medical profession as a whole to honestly exercise these rights in the best interests of their patients, and

WHEREAS, this implication is entirely unwarranted and highly repugnant to all of us as honest and conscientious practitioners of medicine, and

WHEREAS, this principle has also been endorsed by the Section on E.E.N.T. of The Kansas Medical Society, therefore be it

Resolved that Section 8, Chapter I of the Code of Ethics be revised by the A.M.A. House of Delegates with the elimination of sentences 1, 2, 3 and 5 in Section 8, and by substituting in their place an affirmation of the above fundamental rights of physicians in the interest of both the public and the medical profession.

A resolution concerning the relationship between the A.M.A. and its constituent organizations, on the recommendation of the Reference Committee, was not accepted since it was explained that the proposed action is being taken through other means.

Another resolution concerning the A.M.A., regarding the composition of its House of Delegates, was rejected by the House on the advice of the Reference Committee that accomplishment of its purpose would be impractical.

A resolution on accreditation of hospitals, introduced at the Tuesday meeting of the House, was amended by the Reference Committee and was passed by the House in its amended form. The resolution follows:

WHEREAS, the American Medical Association is the proper official organization representing medicine in the United States, and

WHEREAS, it is the obligation of this organization to protect and safeguard medical care to the patients, and

WHEREAS, there has been no immediate recourse for a hospital which has been placed upon a probationary or non-accredited list except to comply with the evaluation of the examiner, and

WHEREAS, if there is not an early, acceptable discharge of this obligation, it will be increasingly difficult to execute this responsibility to the patient: to

provide him the best medical service in the most economical fashion, therefore be it

Resolved that a Board of Mediation be formed to which early appeals may be made.

Next considered was a resolution for the O.O.R.L. Section of the Society concerning ethics. Since the matter was covered in a resolution previously accepted by the House, Dr. Pyle's committee recommended rejection of the O.O.R.L. resolution and the House voted to accept the recommendation.

Dr. Pyle reported that his committee had amended a resolution previously introduced regarding the agenda for annual meetings. The House approved the amended resolution which provided that "all committees and component organizations and individuals who expect to bring resolutions before the House of Delegates of The Kansas Medical Society at its annual meeting be urged to submit them to the executive office by March 1 so they may be published in the JOURNAL for consideration by the county societies prior to the annual session."

A resolution commending the co-operation of professional and lay persons in the program of the National Foundation for Infantile Paralysis was judged by the Reference Committee to be premature. A motion to table the resolution was seconded and was passed by the House.

On the recommendation of the Reference Committee, the House approved a resolution on the study of osteopathic schools. One provision of the resolution was that "this House of Delegates instruct its two American Medical Association delegates to exert every possible effort to have the American Medical Association resolution include a statement upon the quality of osteopathic education." A second provision was that "Kansas delegates be instructed to exert every effort to have made available to the state societies copies of the detailed reports of these school visitations." The third provision authorized sending Dr. Eddy and Dr. Pyle to the June meeting of the American Medical Association.

A resolution calling for study of the licensing act in Kansas was amended by the Reference Committee and was passed in its amended form by the House. The resolution follows:

WHEREAS, the Kansas license act is obsolete in many of its sections, and

WHEREAS, other laws relating to health such as the control of narcotics need broad revisions, and

WHEREAS, such revisions are essential to the improvement of health care in this state, therefore be it

Resolved that the president be directed to appoint a special committee to work with a comparable committee from the Kansas State Board of Medical Registration and Examination, and that together and with aid of the attorney for The Kansas Medical Society and the attorney for the Kansas State Board

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of Medical Registration and Examination they prepare such changes as may be desired in the medical practice act, and be it further

Resolved that a progress report of this committee be presented to the House of Delegates meeting in 1956, and be it further

Resolved that this committee recommend to the Council whatever other changes in health laws they deem to be necessary and proper.

A resolution concerning the Kansas State Board of Medical Registration and Examination was next discussed. The House adopted one portion of the resolution defining The Kansas Medical Society's concept of the board and how it should function. The outline of the board and its duties is as follows:

WHEREAS, the Kansas State Board of Medical Registration and Examination is charged with the responsibility of maintaining within this state medical care of high quality, and

WHEREAS, this is accomplished through strict adherence to standards concerning licensure and regulatory functions, and

WHEREAS, this has been achieved with outstanding success in Kansas because this board is a body not subject to political influence or coercion, and

WHEREAS, this must remain the situation in the future, and

WHEREAS, the performance of this board is of significant importance to the health of the people of Kansas—it is essential that members of the Board be physicians of high professional attainment and ethical practice and exemplary moral character who serve as scientific persons without obligation to or interference from anyone, and

WHEREAS, it will immediately be obvious that if any other course is followed such board will be rendered impotent and without value and is thereby prevented from performing the very services it is designed to accomplish—

The Reference Committee recommended completion of the resolution with no reference to its content. The House voted to complete the resolution by submitting the names of Dr. O. W. Davidson, Kansas City, and Dr. Murray C. Eddy, Hays, for appointment to the board.

The last report from the Reference Committee concerned distribution of Salk vaccine. The committee recommended that the matter be left to county societies, and the House concurred.

Dr. Pyle concluded with a motion that the report of the committee be adopted as a whole. The motion was seconded and carried unanimously.

Dr. Henry N. Tihen, Wichita, reintroduced the subject of the A.M.A. Code of Ethics. His motion that The Kansas Medical Society not agree to comply with Section 8 of the Code of Ethics as currently written was carried with one dissenting vote.

A motion by Dr. Pyle expressing gratitude to the Reno County Medical Society for its splendid work in arranging the 96th annual session was enthusiastically endorsed.

When the president opened discussion of future meeting places, four representatives of county societies responded. The House accepted the invitation of the Shawnee County Medical Society for the 1956 meeting in Topeka, of the Sedgwick County Medical Society for the 1957 meeting in Wichita, of the Wyandotte County Medical Society for the 1958 meeting in Kansas City, and of the Shawnee County Medical Society for the centennial year (1959) meeting in Topeka.

Dr. Eddy then read a letter from Governor Fred Hall and directed that the action suggested be referred to the appropriate committees.

The election of officers followed. The president called for nominations from the floor for all offices, and the name of Dr. Floyd C. Taggart, Topeka, was proposed for the office of alternate delegate to the American Medical Association. That name was added to the ballots listing candidates chosen by the Nominating Committee. The results of the election are reported below.

Members of the Nominating Committee for 1956 were then elected, as listed below.

The president then called for reports from caucuses held in six councilor districts. Those newly elected and those holding over in office are also listed below with information on the date of expiration of individual terms.

Dr. Eddy, as retiring president, then formally introduced Dr. John M. Porter, new president, who adjourned the meeting.

OFFICERS FOR 1955-1956

President.....	Dr. John M. Porter, Concordia
President-Elect.....	Dr. Clyde W. Miller, Wichita
Immediate Past President.....	Dr. Murray C. Eddy, Hays
First Vice-President.....	Dr. Conrad M. Barnes, Seneca
Second Vice-President.....	Dr. Barrett A. Nelson, Manhattan
Constitutional Secretary.....	Dr. James A. Butin, Chanute
Treasurer.....	Dr. John L. Lattimore, Topeka
A.M.A. Delegate	
1956-1957.....	Dr. George F. Gsell, Wichita
A.M.A. Delegate	
1955-1956.....	Dr. L. S. Nelson, Salina
A.M.A. Alternate	
1956-1957.....	Dr. Floyd C. Taggart, Topeka
A.M.A. Alternate	
1955-1956.....	Dr. Lucien R. Pyle, Topeka
Chairman of	
Editorial Board.....	Dr. Orville R. Clark, Topeka

COUNCILORS FOR 1955-1956

1. Dr. Frederick E. Wrightman, Sabetha, term expiring in 1957
2. Dr. Glenn R. Peters, Kansas City, 1958
3. Dr. H. Penfield Jones, Lawrence, 1957
4. Dr. Charles E. Vestle, Humboldt, 1958
5. Dr. Severt A. Anderson, Clay Center, 1957
6. Dr. Floyd C. Taggart, Topeka, 1956

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7. Dr. E. J. Ryan, Emporia, 1956
8. Dr. James E. Hill, Arkansas City, 1957
9. Dr. L. S. Nelson, Jr., Salina, 1957
10. Dr. Harold M. Glover, Newton, 1956
11. Dr. Norton L. Francis, Wichita, 1958
12. Dr. Cyril V. Black, Pratt, 1956
13. Dr. Lloyd W. Reynolds, Hays, 1958
14. Dr. Justin A. Blount, Larned, 1958
15. Dr. L. G. Glenn, Protection, 1958
16. Dr. J. L. Jensen, Colby, 1956
17. Dr. H. Preston Palmer, Scott City, 1957

NOMINATING COMMITTEE

Five past presidents of The Kansas Medical Society were elected by the House of Delegates to name candidates for office in May 1956. Dr. Henry N. Tihen, Wichita, will serve as chairman. Other committee members are Dr. Warren F. Bernstorf, Winfield; Dr. William P. Callahan, Wichita; Dr. W. M. Mills, Topeka, and Dr. J. Haddon A. Peck, St. Francis.

EDITORIAL BOARD

At a meeting of the Council held on May 5, Hutchinson, Dr. Orville R. Clark was reappointed chairman of the Editorial Board and editor of the JOURNAL. He and Dr. Richard Greer were also reappointed to three-year terms on the Board. Present members of the Board, in addition to those two, are Dr. John W. Cavanaugh, Dr. David E. Gray, and Dr. Dwight Lawson. All are from Topeka.

REPORT OF CHAIRMAN OF THE EDITORIAL BOARD

I am pleased to bring to you a report of JOURNAL activities which is in most respects a favorable one. The size has increased by 74 pages over last year for a total of 928 pages. This includes 46 scientific papers of which 36 were submitted by physicians within the state. Of the remaining ten, three were papers presented at the 1954 state meeting.

From the University of Kansas Medical Center we have also had five Tumor Conferences, five Clinico-pathological Conferences, and 11 theses written by senior students as part of their graduation requirements.

We have had two special issues, one devoted to alcoholism in August, 1954, with the co-operation of the Kansas State Commission on Alcoholism, and the ninth Annual University of Kansas issue in March, 1955. This issue has become established as a regular feature, and we are grateful to the faculty of the university for providing the material of which it is composed.

One of our fondest hopes, and one repeated year after year, is that we may receive more papers for publication. This would make possible further improvement of the JOURNAL both qualitatively and quantitatively. Several possibilities for accomplishing this come to mind.

One obvious potential source of additional papers was suggested in my report of two years ago, namely

the papers presented at our state meetings. Whereas a few years ago nine or ten papers were usually obtained from this meeting, it has recently been more apt to be one or two, and was only three this year. At present we know of no papers we may expect from this session. We obviously will not be able to publish all papers presented at these meetings, but with the co-operation of those arranging the programs I am sure that more could be made available. There are organizations which require the contribution of manuscripts of all papers presented and the right to publish those felt to be deserving. I am not suggesting that we should be this strict, but I do believe that if those corresponding with speakers in making arrangements for their coming were to request the privilege of publication of such papers, we could improve the situation somewhat.

I would also like to request that each individual member take stock of his recent experiences for possible appropriate material for an article. There is certainly a wealth of interesting clinical material in the state, and both the JOURNAL and the Society would benefit by receiving a larger number of papers from which to select those for publication. Perhaps the institution of a section on case reports would be advisable, in order to encourage the submitting of short articles of that type which would be of interest.

In January 1955 the JOURNAL appeared with a new cover page, the first change since 1942. It was our good fortune to again have available the designing services of Mr. Bradbury Thompson, formerly of Topeka and now art director of *Mademoiselle* magazine. Mr. Thompson has designed each of the cover pages which the JOURNAL has had for the last 20 years. We have received a number of compliments on the appearance of the new cover, and the members of the Editorial Board feel the new design is attractive and that it is an improvement in our publication. We hope that you agree.

During the past year our experiences with our printer have continued to be most satisfactory. We have had courteous, efficient, co-operative service in all respects. We received a pleasant surprise a few months ago when we were informed that a reduction of about five per cent would be made from our original contract price. This is in effect at present and means a reduction of about \$65 per month in printing cost.

No detailed financial statement will be presented at this time, but details are available for any who desire them. In summary, I am pleased to tell you that between May 1, 1954, and May 1, 1955, the receipts of the JOURNAL were \$21,132.18 and expenditures were \$21,060.72, a gain of \$71.46. The receipts from advertising have been the highest in the history of the JOURNAL, being \$2,000 over last year. This has been due to increased space, increased

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It becomes difficult year after year to find new ways in which to express my appreciation to all of those whose work makes the publication of the JOURNAL possible. The members of the Editorial Board, Doctors John W. Cavanaugh, David E. Gray, Richard Greer, and Dwight Lawson, have been most helpful and have, among other things, evaluated 47 scientific papers and the 11 theses published since our last session. They also have supplied good advice and opinions on the numerous occasions when needed. The term of Dr. Greer expires at this time, and I recommend that the Council re-appoint him to the board. My own term also expires, but I am not doing as one of my acquaintances in the Army did while his surgical team was on detached service; he sent in a recommendation for his own promotion—and got it!

Our associate editors, Dr. Donald P. Trees of Wichita and Dr. Glen R. Shepherd of Kansas City, have assisted materially in procuring material. Dr. Shepherd has edited the C.P.C.'s with the help of Dr. Mahlon Delp and did most of the editorial work for the special University of Kansas issue. Doctors Robert E. Stowell, Chauncey Bly, and Irwin Joffe have prepared the Tumor Conferences. All these activities have been most helpful.

Most of the superlatives have already been used in expression of appreciation of the services of Miss Pauline Farrell of the Society office. It is mainly her work which makes possible the efficient publication of the JOURNAL and makes my obligation only that of supplying a name for the masthead. Now with the JOURNAL for nearly 11 years, she has been and is a most loyal, efficient and conscientious worker.

Our congenial executive secretary, Oliver Ebel, serves the JOURNAL as he does the Society as a whole. Usually "off-stage" or in the background, he has contributed much more than realized, both in editorial writing and in the choice of policy when questions arise. He has been ably aided in this work by his assistant, Rueben Dalbec.

I want to specifically thank all of these people and any others who have helped us for their efforts to make the JOURNAL an interesting publication for the membership of the Society. The association with all of them is one of the pleasant things that goes with the editor's job.

BLUE SHIELD

Dr. Lloyd W. Reynolds, Hays, was chosen to serve again as president of Kansas Blue Shield at the annual meeting of the Board of Directors held at the Baker Hotel, Hutchinson, on May 1. Dr. Francis T. Collins, Topeka, will also remain in office as vice-president. Dr. L. E. Filkin, Concordia, was elected to serve as secretary-treasurer, and Dr. Edward J. Ryan,

Emporia, will be executive vice-president. Dr. Henry S. Blake, Topeka, is immediate past president.

The following trustees will serve during the coming year, one representing each of the councilor districts: 1, Dr. E. T. Wulff, Atchison; 2, Dr. Peter E. Hiebert, Kansas City; 3, Dr. Monti L. Belot, Lawrence; 4, Dr. Francis X. Lenski, Jr., Iola; 5, Dr. Robert M. Carr, Junction City; 6, Dr. Lucien R. Pyle, Topeka; 7, Dr. Edward J. Ryan, Emporia; 8, Dr. Max Wells, Winfield; 9, Dr. L. E. Filkin, Concordia; 10, Dr. H. M. Glover, Newton; 11, Dr. James B. Fisher, Wichita; 12, Dr. Paul M. Hulett, Anthony; 13, Dr. A. M. Cherner, Hays; 14, Dr. S. T. Coughlin, Larned; 15, Dr. E. B. Scagnelli, Dodge City; 16, Dr. Floyd Smith, Colby; 17, Dr. Grant R. Hastings, Garden City. District 9 will also be represented by Dr. H. S. Dreher, Salina, until 1956.

Dr. John M. Porter, Concordia, president of The Kansas Medical Society, and Dr. Clyde W. Miller, Wichita, president-elect, will also serve on the board. Lay members of the board are Mr. H. P. Reynolds, Moline; Mr. B. L. Humphreys, Hutchinson, and Mr. John Junior Armstrong, Muscotah.

More member public representatives will serve on the Board of Directors of Kansas Blue Shield in the future as a result of action taken at the meeting. Beginning next year, three members chosen by the Blue Cross-Blue Shield State Members' Committee will serve on the board.

Prior to this action the board included one member from each of the 17 councilor districts, the officers of the Blue Shield Plan and its immediate past president, the president and president-elect of The Kansas Medical Society, two lay members appointed by the governor, and the chairman of the State Members' Committee.

KANSAS ACADEMY OF GENERAL PRACTICE

A full-day meeting of the Kansas Academy of General Practice was held in Hutchinson on May 2. The 1956 meeting will be held in Topeka on April 30.

The following officers were elected to serve the organization during the coming year: president, Dr. Lawrence E. Leigh, Overland Park; president-elect, Dr. Conrad M. Barnes, Seneca; vice-president, Dr. Bruce P. Meeker, Wichita; secretary-treasurer, Dr. Floyd E. Dillenbeck, El Dorado. New members of the board of directors are Dr. Harold L. Low, Wichita; Dr. Gaylord P. Neighbor, Kansas City, and Dr. Robert W. Fernie, Hutchinson. Delegates are Dr. George L. Thorpe, Wichita, and Dr. Clyde W. Miller, Wichita. Alternates are Dr. Cloyce Newman, Topeka, and Dr. Clovis W. Bowen, Topeka.

KANSAS SOCIETY OF PATHOLOGISTS

A meeting of the Kansas Society of Pathologists was held on May 5 in Hutchinson. The following



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officers were elected: president, Dr. Clarence J. Weber, Salina; vice-president, Dr. C. A. Hellwig, Halstead; secretary-treasurer, Dr. Bert E. Stofer, Wichita.

KANSAS SOCIETY OF ANESTHESIOLOGY

Dr. Floyd C. Taggart, Topeka, was named president of the Kansas Society of Anesthesiology at a meeting held in Hutchinson on May 5. Dr. Walter Stephenson, Norton, was elected vice-president; Dr. Dale U. Loyd, Wichita, secretary, and Dr. Lila Gairns, Topeka, treasurer.

The scientific program for the meeting included four papers: Mortality following Cholecystectomy with and without Curare, Dr. Walter Chen and Dr. Paul Lorhan, Kansas City; Pediatric Anesthesia, Dr. Ray T. Parmley, Wichita; Blood Volume Changes in Thoracic Surgical Procedures Utilizing Radioactive Iodinated Human Serum Albumin, Dr. Charles G. Foster, Winfield; Report of the Committee on the Study of Anesthetic Mortality, Dr. Evan Frederickson, Kansas City.

COLLEGE OF CHEST PHYSICIANS

A meeting of the Kansas Chapter of the American College of Chest Physicians was held at Hutchinson on May 5. The following officers were elected: president, Dr. Carl J. W. Wilen, Manhattan; vice-president, Dr. Martin J. FitzPatrick, Kansas City, and secretary-treasurer, Dr. Paul H. Wedin, Wichita. The president appointed Dr. John L. Morgan, Emporia, to serve as chairman of the program committee for 1956.

KANSAS OBSTETRICAL SOCIETY

Dr. Edward C. Hughes, Syracuse, New York, was speaker at a meeting of the Kansas Obstetrical Society held in Hutchinson on May 3. Dr. Larry Randall, Rochester, Minnesota, will speak at the November meeting of the group in Kansas City.

Officers of the group are: Dr. Robert L. Newman, Kansas City, president; Dr. Robert M. Carr, Junction City, president-elect; Dr. Charles D. Shrader, Newton, vice-president; Dr. Edward X. Crowley, Wichita, secretary-treasurer.

KANSAS ORTHOPEDIC CLUB

Dr. John F. Thurlow, Hays, was elected president of the Kansas Orthopedic Club at a meeting held in Hutchinson on May 5. Dr. H. O. Marsh, Wichita, is secretary-treasurer of the group.

KANSAS STATE PEDIATRIC SOCIETY

Dr. B. I. Krehbiel, Topeka, was named president of the Kansas State Pediatric Society at a meeting held in Hutchinson on May 5. Dr. David R. Davis, Emporia, was elected vice-president, and Dr. Charles T. Hinshaw, Wichita, was named secretary-treasurer.

Dr. Krehbiel will serve as chairman of the Kansas Chapter, American Academy of Pediatrics, until October 1955, when Dr. Davis will take over that office to serve until October of 1958.

KANSAS RADIOLOGICAL SOCIETY

A meeting of the Kansas Radiological Society was held at Hutchinson, but no election was held as officers had been chosen at a meeting held in Kansas City on February 14. Those serving are Dr. A. M. Cherner, Hays, president; Dr. Kenneth Allen, Kansas City, vice-president, and Dr. George S. Ripley, Jr., Salina, secretary-treasurer.

KANSAS PSYCHIATRIC SOCIETY

Dr. Clark Case, Topeka, became president of the Kansas Psychiatric Society at the annual meeting of the group held in Hutchinson on May 5. President-elect is Dr. Thomas Foster, Halstead, and secretary-treasurer is Dr. Arthur Dundon, Sr., Topeka. Dr. Austin J. Adams, Wichita, was named to serve as councilor.

KANSAS MEDICAL ASSISTANTS' SOCIETY

Pauline Keller, Topeka, took office as president of the Kansas Medical Assistants' Society at the close of the organization's annual meeting in Hutchinson, May 1 and 2. Newly elected officers are: president-elect, Mary Ellen Babb, Wichita; vice-president, Hope Finley, Hutchinson; secretary, Maxine Hildebrand, Topeka; treasurer, Edna Crosson, Lyons; corresponding secretary, Mary Thompson, Topeka.

Councilors serving the five districts of the state are Ann Becker, Lawrence; Bessie Parker, Emporia; Irene Weathers, El Dorado; Hazel Fletcher, Hays, and Virginia Brown, Larned.

KANSAS ASSOCIATION OF CLINIC MANAGERS

Mr. John Lockridge of the Axtell Clinic, Newton, was elected chairman of the Kansas Association of Clinic Managers at a meeting held at Hutchinson on May 3. Mr. Walter Goode, Hertzler Clinic, Halstead, was named vice-chairman, and Mr. Will Berthelmer, Wichita Clinic, Wichita, was chosen secretary-treasurer.

SPORTS EVENTS

Sports events occupied the attention of Kansas physicians during the day of Monday, May 2, at the Prairie Dunes Country Club and the Arkansas Valley Rod and Gun Club, Hutchinson.

A tournament banquet was held at the country club in the evening, when prizes were awarded and officers to serve until the 1956 meeting were elected. Dr. Tom Taylor, Norton, was named president of the Kansas Medical Skeet and Trapshooting Association; Dr. William H. Crouch, Topeka, vice-pres-

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(1) Poyne, R. W.; Shetlar, M. R.; Forr, C. H.; Hellbom, A. A., and Ishmael, W. K.: J. Lab. & Clin. Med. 45:331, 1955. (2) Bunim, J. J.; Williams, R. R., and Black, R. L.: J. Chron. Dis. 7:168, 1955. (3) Holbrook, W. P.: M. Clin. North America 39:405, 1955.

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ident for golf; Dr. George L. Gill, Sterling, vice-president for skeet, and Dr. Frederick L. Ford, Topeka, secretary-treasurer. Directors are Doctors Charles F. Taylor, Norton; James W. Shaw, Wichita; George D. Marshall, Colby; Fred N. Bosilevac, Kansas City; John L. Lattimore, Topeka, and Dale D. Vermillion, Goodland.

Dr. A. W. Bradford, Kansas City, was 1955 golf champion. Dr. Gill won the trapshooting event, and Dr. Lloyd W. Hatton, Salina, was first in skeetshooting.

Trophy and prize winners in the championship flight in the golf tournament, in addition to Dr. Bradford, were: for low gross, Dr. H. Lee Barry, Wichita; Dr. Fred N. Bosilevac, Kansas City; Dr. H. Penfield Jones, Lawrence; Dr. Will D. Pitman, Pratt; Dr. George F. Gsell, Wichita; Dr. George D. Marshall, Colby.

For low net in the championship flight, the following were winners: Dr. Glen Ashley, Chanute; Dr. Ed Ashley, Chanute; Dr. Jack Tiller, Wichita; Dr. James R. Weaver, Wichita; Dr. Robert P. Norris, Wichita; Dr. A. L. Ashmore, Wichita; Dr. Frederick Ford, Topeka.

In the first flight, prizes were awarded the following for low gross scores: Dr. M. W. Carlson, Ellinwood; Dr. L. E. Knapp, Wichita; Dr. James W. Shaw, Wichita; Dr. W. L. Pratt, Leavenworth; Dr. Arthur H. Bacon, Wichita; Dr. Raymond J. Leiker, Great Bend; Dr. Tom Taylor, Norton. For low net: Dr. Robert K. Purves, Wichita; Dr. J. L. Wentworth, Arkansas City; Dr. Paul Trimble, Emporia; Dr. D. J. Cronin, Wichita; Dr. C. J. Cavanaugh, Great Bend; Dr. Leo K. Crumpacker, Wichita.

Second flight low gross winners were: Dr. George J. Millet, Larned; Dr. Thomas L. Hill, Arkansas City; Dr. M. F. Frederick, Hugoton; Dr. James F. Barr, Ottawa; Dr. Eldon W. Christmann, Wamego; Dr. Clifford J. Mullen, Kansas City; Dr. E. K. Enns, Newton. For low net: Dr. A. E. Hiebert, Wichita; Dr. Charles F. Taylor, Norton; Dr. George Milbank, Wichita; Dr. Lucien R. Pyle, Topeka; Dr. B. E. Stofer, Wichita; Dr. J. E. Mosseley, Wichita.

Third flight low gross winners were: Dr. George H. Keene, Wichita; Dr. William Crouch, Topeka; Dr. William P. McKnight, Wichita; Dr. Ray A. West, Wichita; Dr. Thomas Dechairo, Westmoreland; Dr. Glen Floyd, Winfield; Dr. Justin A. Blount, Larned. For low net: Dr. Robert C. Tout, Hutchinson; Dr. Robert Sohlberg, Jr., McPherson; Dr. Newton C. Smith, Arkansas City; Dr. Edward L. Fitzgerald, Hutchinson; Dr. Harry T. Hidaka, Wichita.

Trapshooting trophies and prizes went to Dr. George L. Gill, Sterling; Dr. W. A. Smiley, Junction City;

Dr. W. A. Smiley, Jr., Junction City; Dr. J. D. Gough, Chanute; Dr. E. A. Smiley, Junction City.

Winners in the skeet event were Dr. Lloyd W. Hatton, Salina; Dr. Charles Starr, North Hollywood, California; Dr. William Brown, Paola; Dr. F. F. Nyberg, Wichita.

Door prizes were won by Dr. Norton L. Francis, Wichita; Dr. C. M. Nelson, Oberlin; Dr. H. R. Hodson, Wichita; Dr. John M. Porter, Concordia; Dr. M. C. Eddy, Hays; Dr. Albert N. LeMoine, Kansas City; Dr. R. A. Crawford, Hutchinson.

The names of donors of prizes and their gifts follow: Davis and Geck, Inc., emergency suture set; William S. Merrell Company, golf balls; Smith, Kline and French Laboratories, coaster set; Winthrop-Stearns, Inc., onyx ash tray; Goetze Niemer Company, measuring devices and fifth of bourbon; Ciba Pharmaceutical Products, Inc., Norma pencils; Purdue Frederick Company, cash prize; Coe Surgical Supply Company, syringes, needles, syringe sterilizer; Mutual Distributors, Inc., gift certificate; Munns Medical Supply Company, Inc., flashlights.

Mennen Company, after shave lotion; Marcelle Hypo-Allergenic Cosmetics, cosmetics set; Ethicon Suture Laboratories, Surgiset; A. S. Aloe Company, Lakeside cart; W. E. Isle Company, golf balls; Eli Lilly and Company, electric frying pan; Lea and Febiger, Publishers, book *The Knee and Related Structures*; General Electric X-ray Department, reading glass; American Optical Company, sunglasses; Wyeth, Inc., golf balls and medical kit; Armour Laboratories, cuff links; John H. Breck, Inc., shampoo set; Abbott Laboratories, electric clock.

Gerber Products Division, baby food; Baxter Laboratories, golf balls; Midwest Surgical Supply Company, physician's bag; Charles C Thomas, Publisher, book *A History of Medicine*; Ortho Pharmaceutical Corporation, golf balls; Sharp and Dohme, wallet; Burroughs Wellcome and Company, barometer; Clark Snyder, Wyeth representative, electric coffee maker; Hoffmann-La Roche, Inc., golf tees; Doho Chemical Corporation, golf balls.

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THE MONTH IN WASHINGTON

Editor's Note. The following summary of Washington news was prepared by the Washington office of the A.M.A. for distribution to state and regional medical journals.

For the first time in many years, there is a strong possibility that Congress will enact legislation providing federal grants to medical schools. Unlike most bills of the past, which would have given the schools money for salaries and other operating costs, the bill getting most attention now would give money only for construction and equipment.

Action first came in the Health Subcommittee of the Senate Labor and Welfare Committee. Senator Lister Hill (D., Ala.), chairman of the subcommittee as well as the committee, is the principal sponsor of the bill. Senator Hill, long interested in health legislation, was a co-sponsor of the hospital construction act that has been in operation for eight years.

Under the education bill the federal government would grant a total of \$250 million to medical schools at the rate of \$50 million a year for five years. No school could receive more than \$3 million. New schools would receive 50 per cent of construction and equipment costs (up to \$3 million limit), but existing schools would receive only one-third, unless they agreed to increase freshman enrollment by at least 5 per cent. If they wished, schools could set aside 20 per cent of the federal grant into a permanent endowment fund, with earnings to be used for maintaining the building and equipment.

Nearly a score of medical school deans appeared before the Hill subcommittee to urge approval of the bill. Also supporting it were the American Medical Association and the American Dental Association, the latter on condition that dental schools also be included. There were no opposition witnesses before the Hill subcommittee.

The A.M.A.'s witnesses were Dr. F. J. L. Blasingame, a trustee, and Dr. Walter S. Wiggins, associate secretary of the Council on Medical Education and Hospitals. Dr. Blasingame reviewed efforts of the Association since its founding to improve medical education. He cited evidence to show that medical training in this country now is the best in the world, and that the supply of physicians is increasing at a faster pace than the population.

Dr. Wiggins urged the subcommittee to make two changes. He asked that the financial inducement offered for increased enrollment be dropped, as it might cause some schools to take in more students

than they could train properly, a fear that was reflected also in the testimony of some of the medical school deans. He also said the A.M.A. recommended that the law require that six members of the Council on Medical Education be "leading medical authorities."

In the House, the Interstate and Foreign Commerce Committee, facing a heavy schedule of hearings on other bills, was slow to take up the medical education bill. But there, too, its prospects are good, particularly as the bill is sponsored by Chairman Percy Priest (D., Tenn.), whose role in medical bills compares with that of Hill in the Senate.

It appears now that Congress also is willing to go along with the Defense Department once again and extend the doctor draft act for another two years. It is scheduled to expire next June 30. The A.M.A. opposes an extension, maintaining that a more attractive military medical career and better use of uniformed physicians would take care of the services' need for experienced specialists and administrators. The department's main argument for an extension was the need for these older men. Before reporting out the bill, however, the House Armed Services Committee made one significant change. It rewrote the bill to exempt any physicians 35 years or older who had applied for a commission at any time in the past and had been turned down solely because of physical condition.

Also moving ahead on the legislative course is a bill to continue the \$100 per month equalization pay for physicians and dentists in uniform. At hearings before the House Interstate and Foreign Commerce Committee the A.M.A. supported the special pay extension but objected to one provision. The bill originally would have withheld the \$100 from men with an obligation under the regular draft unless they agreed to serve for more than the two-year draft obligation. The House Committee eliminated this section. As the bill went to the House, it provided that all commissioned medical and dental officers receive the special pay.

Still undecided was the fate of a Defense Department's bill for medical and dental scholarships. Scholarships would cover subsistence as well as all school expenses. A student receiving aid for a year or less would have to serve on active duty for an extra year; if the scholarship were for more than a year, he would have to spend three extra years on active duty.

At this writing Congress continues to show no particular interest in reinsurance of medical insurance plans, a bill that the administration considers important. Nor have hearings been scheduled yet on the Number 2 administration bill, that providing federal guarantee for mortgages on such health facilities as hospitals and clinics.

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Bumbalo, T. S., Gustina, F. J.,
and Oleksiak, R. E.:
J. Pediat. 44:386, 1954.

White, R. H. R., and
Standen, O. D.:
Brit. M. J. 2:755, 1953.

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Brown, H. W.:
J. Pediat. 45:419, 1954.

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The Diagnosis of Carcinoma of the Stomach

Raymond Christy, Jr., M.D.

Kansas City, Missouri

Carcinoma of the stomach has long plagued mankind and has been recognized as a clinical entity for an almost equally long time. Among the first ante-mortum diagnoses of carcinoma of the stomach was that of Avenzoar (1090-1162)¹ who diagnosed the plight of a courtier of Ali ben Jussuf with the symptoms of nausea, vomiting, indigestion, emaciation, and an apple-sized mass in the epigastrium as *veruca stomachi* (carcinoma of the stomach). One of the earliest adequate descriptions of autopsy studies on carcinoma of the stomach was that of Antonio Benivieni (1440-1502)² in his book *De Abditis causis Morborum* published in 1507.

Many famous personages have suffered with this disease. Among these was Napoleon Bonaparte; however, this diagnosis is questioned³ since no metastases were found. Napoleon's father, brother, and two sisters are also said to have succumbed to gastric carcinoma.⁴

Physicians themselves are by no means immune. Johannes von Mikulicz, W. J. Mayo, D. P. D. Wilkie, Martin Kirschner, and R. D. Carman are some of the more prominent victims.⁵ Carman, who described the meniscus sign for radiological diagnosis, was inoperable himself before he suspected he had the disease.

A figure quoted in almost every recent article on this subject is that 38,000 to 40,000 persons annually die from carcinoma of the stomach^{6, 7} and that carcinoma of the stomach comprises 0.5 per cent of all hospital admissions and 4.7 per cent of all cancer admissions.⁸

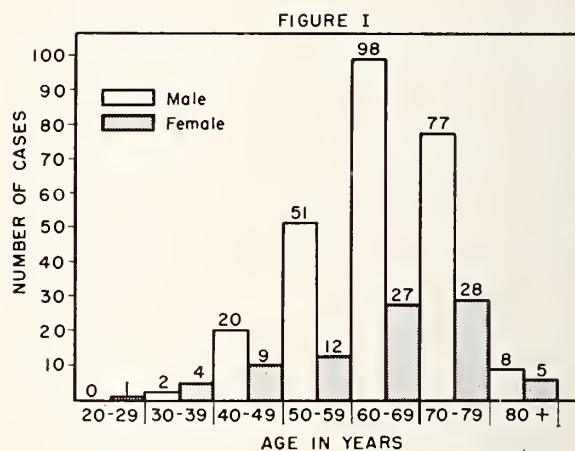
It is thus apparent that gastric cancer occurs with significant frequency and is of sufficiently grave prognosis that it behooves every physician to be sufficiently alert to the symptomatology, physical features, and laboratory findings to make early diagnosis. It is with this purpose that 342 patients with carcinoma of the stomach who have been admitted to the University of Kansas Medical Center from 1930 to 1953, inclusive, are herewith reviewed and reported.

The following data were collected on each case: sex, age, duration of symptoms before diagnosis, symptomatology, physical findings, red blood counts, hemoglobin, gastric analysis, and x-ray barium studies of the upper gastrointestinal tract. This was the most reliable information and it was most consistently available in the charts.

This is one of 11 theses, written by fourth year students at the University of Kansas School of Medicine, selected for publication by the Editorial Board from a group judged to be the best by the faculty at the school. Dr. Christy is now interning at General Hospital, Kansas City, Missouri.

The sex ratio in this series is 256 men to 86 women or approximately 75 per cent males to 25 per cent females. Other reviews have reported the sex ratio from 4:1 to 2:1, males to females.^{7, 8, 9, 10, 11} This male to female ratio has long been known. Mathew Baillie (1761-1823) pointed out that gastric carcinoma was more common in the male. Baillie also believed that there was an inherited predisposition toward cancer of the stomach.¹²

The age of the patients by decades may be seen in Figure 1. It may be noted that in men the greatest number of cases occurred during the seventh decade,



while in women it was in the seventh and eighth decades. These figures indicate a slight shift toward the older age group when compared to those of Jemerin and Cope¹³ who found the peak incidence in the sixth decade of life. Forty years ago it was stated that 65 per cent of carcinoma of the stomach patients were between the ages of 40 and 60.¹⁴ In 1931 the average age was 44 years, in 1945 the average age was 53.2 years,⁸ and a recent report states the average age to be 55 years.¹⁵ While these specific figures may not be of much practical import, it is important to note that the average age is increasing. Whether this is merely a reflection of the advancing age of the populace is speculative.

Hoerr¹⁶ believed that the chance for cure diminishes with advancing age, due in part to the fact that older patients with blunted sensitivities are less likely to recognize any warning symptoms. This facet of the problem might well be borne in mind when dealing with the geriatric patient.

The duration of symptoms prior to diagnosis is, in

the author's opinion, an indication of the effectiveness of information regarding cancer directed toward the lay public and of the degree of alertness to the diagnosis of neoplasm by the physician. For this reason the data have been broken down into five-year sections in an attempt to ascertain if there has been a significant change in the length of time the patient has symptoms of gastric cancer prior to diagnosis.

It may be seen from Table I that, while there is minor change in the percentage reporting with shorter length of symptoms, the over-all picture is relatively unchanged from 1930 to the present. This is indeed disappointing when one considers the time and effort involved in attempting to arrive at an earlier diagnosis.

Regarding all carcinoma it has been reported that

symptoms; however, they were not elicited with sufficient frequency in this series to make any tabulation of them significant.

It is of interest to note the observations of other authors in regard to the symptoms with which the patient with carcinoma of the stomach actually presents himself to the physician. Several authors^{11, 13, 14, 25, 26} from 1914 to 1952 have reported that the symptoms of gastric carcinoma are, in order of decreasing frequency:

1. Weight loss 70-80 per cent
2. Pain 70-80 per cent
3. Vomiting 40-60 per cent
4. Anorexia 35-70 per cent
5. Gastric distress 30-60 per cent

TABLE I

Duration of Symptoms	1930-34		1935-39		1940-44		1945-49		1950-53	
	Cases	% Total	Cases	% Total	Cases	% Total	Cases	% Total	Cases	% Total
1 Month	1	2.1	2	3.7	4	7.5	4	5.1	9	8.3
1-3 Months	8	17.4	10	18.5	6	11.3	16	20.5	22	20.2
3-6 Months	10	21.4	12	22.2	15	28.3	26	33.3	22	20.2
6 Mo.-1 Yr.	9	19.6	14	25.9	18	34.0	13	16.6	22	20.2
1-2 Years	12	26.0	8	14.8	6	11.3	11	14.1	17	15.6
2 Years	8	16.9	8	14.8	4	7.5	8	10.2	17	15.6

Per cent of total refers to the total number of cases for the period cited.

patients' delay in seeking the aid of physicians and physicians' delay in diagnosing cancer is decreasing.¹⁷ In respect to carcinoma of the stomach, Jemerin and Cope¹³ report no significant decrease in the duration of symptoms between 1938 and 1947. The data presented here corroborate this.

Boyce¹⁸ has reported that the duration of symptoms was longer in 1952 than in 1933 and 1942. He also noted that the shorter the duration of symptoms, the shorter the duration of life. Welch and Allen²⁹ reported that the delay before treatment was approximately the same in 1937-1946 as it was in 1927-36.

The usual symptoms of carcinoma of the stomach which are enumerated in textbooks are not those of early carcinoma. This statement was made at least as early as 1914,¹⁴ probably many years prior to that, and has been oft repeated since.

The very small, early lesion probably produces no symptoms. Bockus²¹ stated that any gastric lesion large enough to produce symptoms is large enough to be seen on x-ray or gastroscopy, to cause obstruction, or to cause bleeding.

Engel²² stated that he has considered the symptoms of pain, weight loss, anemia, and hematemesis and discarded all of them as early signs. The only consistent early symptoms he found were: (1) tired and weak feeling, (2) loss of appetite, (3) loss of desire for meat, and (4) indigestion (mild distress related to meals).

Steigman²³ and Harris²⁴ concur, in essence, with this observation. These are probably valid early

In the group of patients reported here the symptoms were:

1. Weight loss 66.8 per cent
2. Epigastric pain 56.4 per cent
3. Nausea and vomiting 46.7 per cent
4. Gastric distress 41.5 per cent
5. Anorexia 33.9 per cent
6. Weakness 29 per cent
7. Melena 14 per cent
8. Dysphagia 14 per cent
9. In descending order of frequency: epigastric mass, hematemesis, umbilical node enlargement, and jaundice.

Physical examination of the patient with carcinoma of the stomach is often non-contributory. In this series 23.9 per cent had essentially normal physical examinations. Careful palpation of the abdomen is the most fruitful area of the physical examination. Many authors^{8, 13, 20, 25, 27, 28} have reported that about 30-50 per cent of the patients have a palpable mass in the epigastrium. LaDue et al.²⁵ stated that an epigastric mass was present in 57 per cent of inoperable cases and in 42 per cent of operable cases.

Of these 342 cases, 198 or 58 per cent had a palpable epigastric mass; 58 or 16.9 per cent had epigastric tenderness.

Distant metastases, manifested by Virchow's node, umbilical nodes, and rectal shelf adenopathy, were present in 8.5 per cent, 3.2 per cent and 1.2 per cent respectively.

Viacava and Pack³⁰ stated that 2.6 per cent of carcinomas of the stomach had Virchow's node, and in 1.9 per cent of their cases this was the first sign of carcinoma. Virchow³⁰ pointed out in his original description of supraclavicular adenopathy that the absence of such nodes was of no prognostic significance.

The blood picture of carcinoma of the stomach is varied. In the majority, however, some degree of hypochromia did exist. Jemerin and Cope¹³ reported that 60 per cent of their cases had hemoglobin values of less than 75 per cent. Safar and Clifton²⁸ found anemia in 80 per cent of their cases. In this series 52 per cent of the patients had hemoglobin values below 70 per cent and 30.6 per cent had red cell counts less than 3.5 million. These are comparable to the previously cited series.

The problem of the relationship of pernicious anemia to carcinoma of the stomach is complex. The simultaneous occurrence of pernicious anemia and carcinoma of the stomach was first described by Quincke³¹ in 1876. The incidence of carcinoma of the stomach in patients with pernicious anemia has been stated to be 1.7 per cent,³² 4.4 per cent,³³ 8 per cent³¹ and 12.3 per cent.³⁴ Kaplan and Reiger³⁴ found the incidence of carcinoma of the stomach in patients with pernicious anemia to be three times that ex-

pected in an unselected autopsied series. However, Monroe and Griffin³² found the incidence to be so small that in pernicious anemia patients who were asymptomatic, routine gastrointestinal x-ray series were not indicated.

Conversely, Bird³⁵ is of the opinion that about one in 50 carcinomas of the stomach might arise from pre-existing pernicious anemia. Of the 342 patients reviewed here, two had been diagnosed as having pernicious anemia. This is considerably below other figures cited, and no explanation can be offered. Even though the evidence regarding this situation is controversial, one cannot ignore the possibility of an etiological relationship when dealing with patients who have pernicious anemia.³³

Another interesting facet of the hematological studies is the work of Aird et al.³⁶ which indicates that there is a significant difference in incidence of carcinoma of the stomach among those persons of blood type A compared to the remainder of the population. No data is presented here to substantiate or repudiate this information.

Gastric analysis for the presence of free hydrochloric acid has long been a standard test for confirmatory evidence of neoplasm in differentiating it from benign ulcer. Reports of the frequency of

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achlorhydria vary from 30 per cent to 87 per cent.^{8, 13, 22, 26, 37, 38, 39}

Comfort et al.³⁷ have studied gastric acidity before and after the development of gastric carcinoma, and they concluded that, in general, achlorhydria developed prior to development of carcinoma. However, chronic gastritis, itself noted as a precursor of carcinoma of the stomach,⁴⁰ may produce achlorhydria as well as the neoplasm.³⁷

Niazi et al.³⁸ found that patients who had extra-gastric neoplasms had the same incidence of achlorhydria as patients in the same age group without neoplastic disease. They also found that 100 per cent of patients with gastric polyps, which are considered by some⁴¹ to be an early indication of gastric carcinoma, had achlorhydria. They were not able to demonstrate a cause and effect relationship.

In this series gastric analysis was performed on 178 of the 342 cases, and achlorhydria was found in 73 per cent. This compares most favorably with the figure of Cooper who found 75 per cent were achlorhydric.³⁹

Determination of gastric acidity may become more easily accomplished with the oral method of Segal,³⁹ using quinine in combination with a cation exchange resin and then finding quinine in the urine if free hydrochloric acid is present in the stomach.

At present, x-ray examination of the barium filled

stomach is the most accurate tool available in diagnosis of gastric carcinoma.^{22, 42, 43} The accuracy of x-ray diagnosis has been reported from 82 per cent to 99 per cent.^{8, 20, 22, 28, 44} The major problem in x-ray diagnosis is the differentiation of carcinoma from benign gastric ulcer.

Pack²⁰ stated that fluoroscopy and x-ray are 91.5 per cent correct with an additional 3 per cent suspected. His criteria are worthy of quotation.

"1. Filling defects expressed as changes in contour of the gastric shadow.

"2. Altered pyloric function, such as gaping pylorus and obstruction of the pylorus.

"3. Altered function of the cardiac orifice such as patent but rigid cardiac orifice and obstruction of the cardia.

"4. Hypermotility.

"5. Absence of peristalsis of the gastric wall.

"6. Diminished motility, loss of flexibility of the gastric wall.

"7. Diminution of size of stomach.

"8. Antiperistalsis.

"9. Niche in the pre-pyloric region within 2.5 cm. of the pylorus.

"10. Widening of space between the gas bubble and cupola of the diaphragm.

"11. Soft tissue densities in the cardia outlined by the gas bubble.

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"12. The meniscus sign.

"13. Absence of rugal markings.

"14. Niche on relief studies without radiating rugal lines.

"15. Niche on greater curvature."

The problem of malignant change in a benign ulcer remains highly controversial. If the frequency of malignancy arising in ulcer is as high (71 per cent) as was reported in 1909 by Wilson and McCarthy,⁴⁵ then the safe treatment for gastric ulcer would be surgical. Palmer⁴⁶ has pointed out that physicians have a responsibility to abstain from surgery on the normal stomach as well as to do surgery for malignancy. It behooves us, therefore, to use all resources to attempt to differentiate benign gastric ulcer from malignancy.

Opinions vary considerably regarding carcinomatous change in benign ulcers. First of all, does carcinoma develop in a benign ulcer? Waugh and Cavanaugh⁴⁷ quote the saying, "Carcinomas ulcerate, ulcers do not caruncate." They also raise the pertinent question as to whether or not carcinoma developing in an ulcer has been carcinoma in situ all the while. Sante⁴⁸ states that it is the consensus among radiologists that primary gastric ulcers are benign, always remain so, and do not undergo malignant change. Brown⁴⁹ states the incidence of malignant change in gastric ulcer as 1.1 per cent. No attempt will be made here to settle this dispute.

In this series the upper gastrointestinal tracts of 323 of the 342 patients were examined by x-ray. In 304, or 91 per cent of the cases, a positive diagnosis of carcinoma of the stomach was made. This compares favorably with statistics previously cited.

Gastroscopy was first attempted by Kussmaul⁵⁰ and was unsuccessful. Mikulitz performed the first successful gastroscopy.⁵¹ It remained, however, for Schindler⁵² to perfect the gastroscope and make its use practical. The gastroscope is said to equal x-ray in accuracy.^{19, 21, 41} Gastroscopic examinations were not performed in enough patients in this series to warrant comments.

After citing all of the figures regarding the accuracy of diagnosis with various instruments and techniques, it is considered appropriate to quote Ochsner and Blalock.⁵³ "It is our firm belief that if we are to improve the results obtained in the treatment of gastric cancer, we must treat the lesion before it can be diagnosed according to our present clinical methods."

SUMMARY

Three hundred forty-two cases of carcinoma of the stomach have been reviewed with reference to diagnosis; a review of the literature has been presented with which to compare the data obtained.

The sex incidence is found to be 75 per cent males and 25 per cent females. The duration of the patient's symptoms prior to the diagnosis was found

to be relatively unchanged from 1930 to 1953. The symptoms of carcinoma of the stomach were, in descending order of frequency: weight loss, 66.8 per cent; epigastric pain, 56.4 per cent; nausea and vomiting, 46.7 per cent; gastric distress, 41.5 per cent; anorexia, 33.9 per cent; weakness, 29 per cent; melena, 14 per cent; and dysphagia, 14 per cent.

The physical findings were palpable epigastric mass, 58 per cent, and epigastric tenderness, 16.9 per cent. Supraclavicular adenopathy of Virchow was found in 8.5 per cent of cases. Fifty-two per cent of the patients had hemoglobin below 70 per cent, and 30.6 per cent had red blood counts less than 3.5 million. Achlorhydria was found in 73 per cent of those on whom gastric analysis was performed. The x-ray study of the upper gastrointestinal tract was diagnostic or positive in 91 per cent of cases studied.

Theodor Storm, a German poet and sufferer of gastric carcinoma, described its course in a poem which I take the liberty of quoting.

Begem des Endes⁵

'Tis but a prick, 'tis scarce a pain,
Just felt, to which no name you give:
Henceforth it speaks again—again,
Uneasy now you have to live.

If to complain you try—of what?

You cannot put it into speech:

Within you say, "Indeed 'tis naught!"

Henceforth it holds fast like a leech.

So seldom strange your world does grow,

And quickly you are stript of hope,

Until at last you know

That with Death's shaft you cannot cope.

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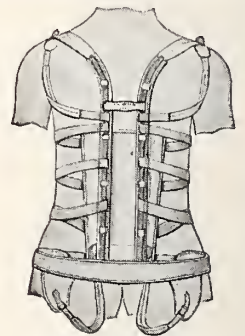
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BOOK REVIEWS

Handbook of Treatment. By Harold Thomas Hyman. Published by J. B. Lippincott and Company, Philadelphia. 511 pages. Price \$8.00.

This book is an attempt to cover the methods of treatment in use in medicine today. The different subjects are taken up in alphabetical order with headings covering subjective complaints, objective findings, diagnosed entities, and a roster of drugs. Each topic is treated first by a short review of the current concepts of the entity, followed by an outline of immediate care, continuing contingencies, and complications of each condition with additional outlines and alternative forms of treatment.

The outlines of treatment are written up in great detail with attention to minutia, such that one has the feeling that the basic principles of treatment have been lost sight of. This book has all the disadvantages of attempting to outline details of treatment rather than principles of treatment. For that reason, much of the detail is out of date by the time of publication, and it is impossible to distinguish between the broad underlying principles of treatment and the ever changing details from the text.

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Controversial subjects are treated right along with established principles, and the lack of bibliography makes it difficult to trace down the origin of any of the material. It is doubtful that this book adds much to the large number of books on treatment already available.—R.E.B.

Viral and Rickettsial Diseases of the Skin, Eye and Mucous Membranes of Man. By Harvey Blank and Geoffrey Rake. Published by Little, Brown and Company, Boston. 285 pages, 100 illustrations, 36 in color. Price \$8.50.

This book contains detailed information, written in a clear manner, concerning the viral and rickettsial diseases affecting the tissues of the skin and body orifices. In the beginning chapters the authors deal with fundamental aspects of viruses and rickettsia as well as the diagnosis of infections caused by these microorganisms. In the rest of the book etiologic, pathologic, clinical, and therapeutic aspects of specific diseases are covered. The text is not limited to well known diseases. The reader also will become acquainted with such infections as herpangina, cat scratch fever, and milker's nodules.

It is this reviewer's opinion that the book should be of great value to the medical student as well as to the general practitioner, ophthalmologist, and dermatologist.—A.W.

Arthritis and Rheumatism, the Diseases and Their Treatment. By Charles L. Steinberg. Published by Springer Publishing Company, Inc., New York. 326 pages, 124 illustrations. Price \$10.

This book, representing the combined efforts of Doctor Steinberg and five other contributors, is intended to cover in a general sense the entire area embraced by the arthritis and rheumatism processes. The intent of the authors is to aid the physician who cares for these types of patients in the discharge of his everyday responsibilities to his patients, not to cover each area in an exhaustive, detailed manner.

The first two chapters are concerned with the physiology of joints and the pathology of rheumatoid and collagen diseases. The third chapter deals with the elements to be considered in performing a physical examination, the various laboratory procedures which have been found to be of diagnostic importance and, without comment, the three "standard" schemes of classification of the various types of arthritis and rheumatism.

Excellent, detailed chapters follow on rheumatic fever, rheumatoid arthritis, rheumatoid spondylitis, variants of rheumatoid arthritis, psychogenic rheumatism and fibrositis, osteoarthritis, gout, and malignant collagen diseases. The 12th chapter deals with orthopedic treatment of pain in the major joint areas. The final chapter concerns the use of physical medicine

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and rehabilitation procedures which too frequently are overlooked as part of the over-all treatment program.

In the clinical section, greatest attention has been paid to rheumatic fever and rheumatoid arthritis. This is due in part to the nature of these disease entities but also because of the effort at fair presentation of the many treatment procedures which are currently in vogue. Some of the chapters are brief; the subject of osteoarthritis is disposed of in four and one-half pages, for example.

Many photomicrographs are reproduced which have limited meaning for the average physician; it would have been extremely helpful had these illustrations been labeled instead of having the entire message contained in the legend below the illustration.

The reviewer is impressed with the lack of any but very casual reference to the psychiatric aspects of the various forms of arthritis and rheumatism. The implication is that this topic is adequately covered in the chapter on psychogenic rheumatism. It is realized that a medical area as large as arthritis and rheumatism cannot have all details covered in a book short enough to be read.

Medical students will find much in this book to guide their clinical learning. The internist or general

practitioner will find this book brief enough to be read, yet detailed enough to cover most of the clinical aspects of these diseases. Orthopedists and psychiatrists will gain from the medical knowledge so ably presented. The average physician will find this book far more useful in his daily practice than as a reference text.—*D.L.R.*

SCHOLARSHIP TO DR. MILLER

A scholarship of the John and Mary R. Markle Foundation has been awarded to Dr. C. Arden Miller, assistant professor of pediatrics at the University of Kansas School of Medicine, for continued research in pediatrics and microbiology. The grant provides \$6,000 a year for each of five years for financing studies while Dr. Miller continues as a member of the faculty.

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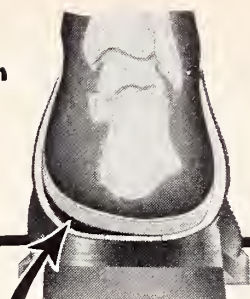
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No. 7

Diverticula of the Urethra in the Male

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Halstead, Kansas

Diverticula of the urethra in the male is a rare condition. In January of 1951, Pate and Bunts reviewed the literature and found only 197 cases up to that time. They added 28 cases found in paraplegics. Abeshouse, in November of 1951, reviewed the literature and added four cases of his own, making a total, according to his review, of 224 cases.

According to Watts, who made an extensive study of the condition in 1906, urethral diverticula may be either congenital or acquired. They may occur in the anterior urethra or in the posterior urethra.

The early authors felt that true diverticula were those whose walls contained all the layers of the normal urethra, while pseudo-diverticula were those whose walls consisted of fibrous tissue lined by a modified epithelial lining. The sacs are often lined by an epithelium which is stratified squamous in type. According to Pate and Bunts, the normal pseudostratified columnar epithelium of the anterior urethra undergoes squamous metaplasia to become finally epidermoid in nature.

In 1936 Kretschmer reviewed the literature on diverticula in the anterior urethra in male children and found only 20 cases. He stated that congenital diverticula occur in the anterior urethra and in young subjects in a large percentage of cases, while acquired diverticula occur for the most part in the posterior urethra and are to be found in older patients, or from rupture of cysts into the urethra.

ETIOLOGY

Voillemier in 1868 felt that urethral diverticula

were due to the lack of development of the spongy tissue of the urethra.

DePooli in 1885 felt that the condition was due to primary atrophy of the corpus spongiosum, allowing a bulging of the urethra on the ventral surface.

Kaufmann in 1886 was of the opinion that they resulted from urinary obstruction in fetal life.

Watts in 1906 stated that urethral diverticula could result from obstruction due to adhesions of the prepuce to the external meatus, or from a congenital narrowing of the preputial orifice. He also pointed out that they could result from congenital stricture of the urethra or from urethral valves.

Suter in 1908 explained the condition on the basis of an embryological condition. He stated that the urethra originated from the genital furrow and is covered by epidermis. The canal which is formed occupies the position of the urethral canal and it is not at first closed on the ventral surface. There is a communicating bridge of epithelium connecting with the external skin. Normally this epithelial bridge is absorbed, but when it persists, Suter felt that it gave rise to diverticula.

Cabezas in 1913 likewise mentioned that there was a defect in the urethra which was present, probably with an abnormal blood supply, such as incomplete closure of the urogenital gutter, and that other etiologic factors were secondary in the formation of urethral diverticula.

Urethral diverticulum may lead to the formation of a fistula to the skin or stone formation. Howze and Hennessey reported a case containing stone, and Peacock also reported such a case. Grube reported the formation of stones in urethral diverticula. Sand-

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rock and Elkner in July 1951 reviewed the literature and found 33 cases containing stone and reported a case of their own.

SYMPTOMS

Dribbling of urine, distress in the perineum, and the presence of a tumor mass on the ventral surface of the penis which may disappear on pressure are cardinal symptoms of the disease. In one of my cases one could press on the diverticulum and expel urine from the meatus as though one pressed on the bulb of a syringe. A catheter passed into the diverticulum would allow the mass to be enlarged when filled with sterile water. It would hold approximately three ounces of water. My patient complained that when he sat down or got in any position in which pressure was applied to the penis, he would empty the pouch and get his clothes wet.

DIAGNOSIS

The diagnosis may be made by the finding of a tumor mass on the ventral surface of the penis, by means of cystoscopy, and by urethrograms. In my case I was able to demonstrate the diverticulum by coiling a catheter inside the pouch.

TREATMENT

Small diverticula may be treated in a conservative manner and left alone. However, excision of the diverticulum is the treatment of choice when operation is indicated. Some authors feel that diversion of the urinary stream is important, while others have obtained good results by catheter drainage. Because this condition is so rarely found in the male, I wish to report the following two cases.

CASE 1

Mr. J. S., male, age 65 years, was admitted to the Halstead Hospital on August 19, 1952.

Dribbling and incontinence of urine had been present since a suprapubic prostatectomy on March 12, 1952. During this interval of time he had worn a Cunningham clamp during the daytime but not at night. He felt well otherwise. Two months before the present admission he noted a swelling on the ventral surface of the penis at the penoscrotal junction. This was more to the right than the left side. He stated that when he would bend over or get pressure on this sac, it would drain urine. The sac also caused a dull ache in this region. There was mild burning on voiding. Temperature on admission was normal. The nonprotein nitrogen was 46.5, creatinine 1.95, and urea nitrogen 20.1 mg. per 100 cc. of blood. Urine analysis was normal except for a few pus cells.

Plain urogram and intravenous pyelograms were normal. The blood count was normal. Physical examination revealed a well developed, well nourished

white man who did not appear acutely ill. The head, neck, heart, and lungs were negative. The kidneys, liver, and spleen were not palpable. The ventral surface of the penis revealed a swelling at the penoscrotal junction. Pressure on the sac caused it to empty and urine to flow from the urethral meatus. The urethrogram showed the large diverticulum demonstrated in Figure 1.



Figure 1. Diverticulum of male urethra.

The preoperative diagnosis was diverticulum of the urethra.

At operation on August 21, 1952, the sac of the diverticulum was isolated through an incision on the ventral surface of the penis and through the median raphe of the scrotum. After resection of the diverticulum, the urethra was closed across a Foley catheter by two layers of fine catgut. The fascia was closed, a drain was placed in the scrotum, and the skin was sutured with fine silk. The patient made uneventful recovery with good results.

CASE 2

Mr. J. F., a white male, age 45 years, was admitted to the Halstead Hospital on October 8, 1950, complaining of nocturia, frequency, dribbling, pain on voiding, slowness of stream, and gross hematuria. The patient had suffered a transection of the spinal cord and fractured vertebrae in an automobile accident 10 years before. Eight years before four large stones were removed from his bladder. In December 1947 a large dumbbell type stone was removed. Six

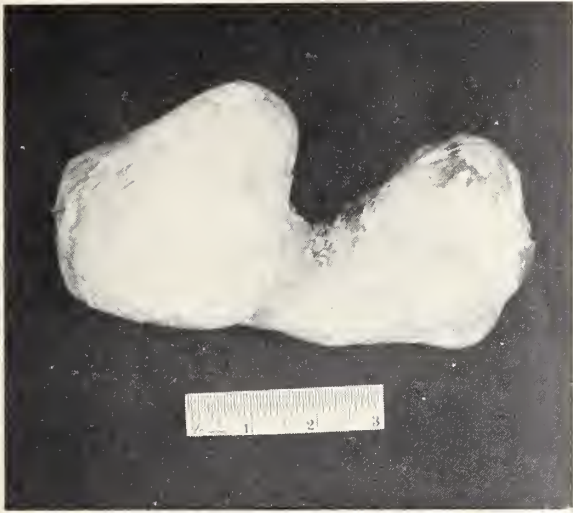


Figure 2. Stone in diverticulum of male urethra.

weeks prior to this admission he had been unable to control his urine, and on admission he was unable to void at all.

Physical examination revealed a paraplegic who was alert, intelligent, and cooperative. The head, neck, heart, and lungs were negative. The liver, spleen, and kidneys were not palpable. The abdomen showed the scars of previous suprapubic incisions. There was pain and deep tenderness over the suprapubic area. The skin over both ankles was dark, scaly and discolored. Rectal examination was negative. There was no voluntary motion in the lower extremities. The temperature was 101 degrees on admission. The urine examination showed albumin 1 plus with 50 to 75 white blood cells and 12 to 20 red blood cells per low power field. The hemoglobin was 80 per cent and the white blood count 7,400. The blood chemistry showed a nonprotein nitrogen of 50 and a creatinine of 2.6 mg. Plain urogram showed the presence of an hourglass stone in the bladder neck, one end in the bladder while the other end rested in a diverticulum of the posterior urethra.

On October 11, 1950, the stone was removed by suprapubic operation. He made good recovery and on November 3, 1950 a transurethral resection of the bladder neck was done. The opening from the urethral diverticulum was enlarged with the idea of causing better drainage. He was discharged from the hospital on November 19, 1950 and was voiding freely at that time.

DISCUSSION

It was my opinion that the urethral diverticulum in the first case resulted from obstruction due to the wearing of a Cunningham clamp. Abeshouse mentioned that a penis clamp was worn to control incontinence following an operation for traumatic stricture of the urethra in one of his cases. Pate and Bunts had one patient who wore an incontinence clamp for several months and noted the development of a progressively enlarging penoscrotal mass. However, in all of these cases there could have been a congenital weakness and other factors of etiology involved.

The second case represents a patient with urethral diverticulum and stone formation. He had been a paraplegic with cord bladder for 10 years. Plastic operation on the urethra was not done in this case because of his general physical condition and the amount of previous surgery he had been forced to undergo. It was felt that removal of the stone and resection of the bladder neck was enough at that time.

SUMMARY

1. Diverticulum of the male urethra is a rare condition.
2. A case is reported which followed the use of a Cunningham clamp for incontinence following suprapubic prostatectomy.
3. Excision of the diverticulum and plastic repair of the urethra was done in the case reported.
4. A second case of diverticulum of the male urethra with formation of an hourglass stone in a paraplegic is reported.

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Paper Drum Repair of the Ear

Joseph A. Budetti, M.D., and Ernest M. Seydell, M.D.

Wichita, Kansas

One of the older yet little known techniques of otology¹ is the repair of lacerations and perforations of the ear drum. Traumatic rupture of the ear drum is not as rare in civilian life as one might expect. In our office seven ruptured drums were seen in a period of a few months: two in women "boxed" on their ears by their husbands, one in a young man scuffling with his younger sister, one drum punctured by a bobby pin, one from an accidental blow while swimming under water, and two injudiciously produced by someone's blind attempt to remove foreign bodies—one a stone and the other a thistle burr.

Quick and satisfactory closure of these holes in the ear drum is invaluable to the patient not only because it prevents prolonged morbidity and recurrent ear infections but also for the psychological benefit in eliminating a physical defect. The intact drum usually improves the patient's hearing, permits him to take showers and go swimming without fear of getting water into the middle ear, and removes the threat of mastoiditis.

Paper drum repair is not restricted to correcting traumatic tears of the drum. Chronic dry perforations which have resulted from infections and "earaches" are also amenable to repair in properly selected cases. The hole in the drum creates a vicious cycle of recurrence of infection after infection.

As we know, the intact drum acts as a damper to prevent air blasts from blowing out of the nasopharynx through the eustachian tube. It supplies back pressure to the air current if the patient should cough or sneeze or blow his nose forcibly. Without this damper—when a perforation exists—bacteria are carried from the nasopharynx into the middle ear. This sets up another infection, which in turn aggravates the perforation as a rule.

It is an interesting observation that the size of the perforation has no direct relationship to the amount of hearing loss. This was dramatically demonstrated in our military experience with concussion (shell) blast injuries. Deafness was proportionate to inner ear damage produced by concussion rather than to the size of the perforation. Some persons with loss of practically the entire drum showed almost normal hearing while others with little or no perforation at all showed severe hearing loss.

In trauma, the symptoms are sharp, sudden ear pain at the time of injury, bleeding from the ear to some degree, and variable amounts of deafness and

vertigo. In early stages, treatment consists of planned, deliberate, and scientific neglect. The ear canal is cleansed, using dry aseptic technique. All reports indicate that about 75 per cent of patients with dry, traumatic perforations will develop infection if they are given ear drops or have their ears irrigated.

There is some difference of opinion as to whether or not this infection is harmful. Some persons believe that infection may speed spontaneous healing of traumatic perforations. We also have seen this paradox occur, but it has been the exception rather than the rule. Our patients are always instructed to avoid nose blowing and keep the ears dry. If an infection is present, it is treated with antibiotic ear drops. After determining the organism present and its sensitivity, we give the patient appropriate antibiotics systemically.

Late treatment consists of the application of a paper prosthesis in properly selected cases. These "paper drums" are applied for several reasons. An intact tympanic membrane is, of course, always desirable. Closing the middle ear produces physiological conditions which are more favorable for repair. The artificial membrane acts as a bridge for the growth of new epithelial tissue. In old perforations, the epithelial edge must first be destroyed by cautery or excision. The foreign body reaction produced by the presence of paper may be a factor in stimulating healing.

Paper drums are not usually applied to new perforations if the drum appears to be decreasing in size during the initial period of observation, since most traumatic perforations are known to close spontaneously.

In chronic perforations, paper drums are applied only in those with persistently dry ears. There should be no residual inflammation of the tympanic membrane. There must be a good margin of drum between the perforation edge and the annulus. Very large or marginal perforations seldom close, especially if the "germinating" center about the umbo is destroyed.

In perforations of more than four months' duration, the cuboidal epithelium of the middle ear may have shown metaplasia to the stratified squamous type. In such cases closure may possibly produce subsequent danger of cholesteatoma. This same danger is present in a perforation associated with a chronic or recurrent otitis media, even though the middle ear

may be dry at the time treatment is contemplated. For this reason chronic cases must be carefully selected if this technique is to be applied.

The paper drums being used at present are exactly that—they are cut from ordinary onion-skin typing paper. Any size disc may be used as long as it is larger than the perforation to be treated. The external canal and drum are cleansed with alcohol and dried with sterile cotton.

Local application of a phenol-cocaine-camphor sedative tampon is useful in avoiding pain, although the treatment is relatively painless. The epithelial edge of the perforation is cauterized with pure phenol on a very fine cotton tipped applicator. Phenol is used because excess caustic can be neutralized by alcohol when the paper drum is applied. Trichloroacetic acid or silver nitrate may be an alternate choice.

The paper disc is saturated with alcohol and applied lightly to the tympanic membrane by means of a cotton tipped applicator. A second disc may be overlapped if the first does not cover the entire perforation. The dampness of the alcohol produces sufficient adhesive quality for the paper to attach itself tightly. Such adhesion is always maintained after the alcohol has evaporated.

The patient is instructed not to blow his nose. The disc is left in place for at least three weeks or until it is carried off the drum by normal growth proc-

esses. The perforation may be visualized through the thin paper disc so that the healing process may be easily followed. Following spontaneous removal of the paper drum, second and third applications may be made if necessary.

Many alternate techniques have been recommended such as the use of the lining membrane of an egg. The phenol-paper-alcohol technique is extremely simple, thoroughly aseptic, and requires no special instruments or materials. This technique has shown good results in this office. Only in occasional cases may the ear become infected after application of the paper drum. Routine care usually controls infection.

Because of the simplicity of the technique, the high percentage of successful results in our carefully selected cases, and the ability of this treatment to restore a patient to fully normal physical status, closure of selected perforations by such artificial means is highly recommended whenever perforations do not appear to be closing spontaneously. We have not quoted percentage figures because of the high standards we applied in selecting cases to be treated. Figures could be high or low by variation of standards used. Experience in selecting cases for treatment is usually the keystone for success with this technique.

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The Treatment of Goiter during Pregnancy

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Enlargement of the thyroid gland during pregnancy is common, not only in endemic goiter belts but also in goiter free regions; however, it is unusual to encounter a pregnant patient with a goiter requiring surgical removal during pregnancy. In the Mayo Clinic,¹ during a period of 25 years, only 94 patients with pregnancy goiter were operated upon, while there were 12,796 deliveries and over 20,000 thyroidectomies. In the Cleveland Clinic² during a 10-year period, 33 pregnant women had thyroidectomies, i.e., 1 per cent of married goiter patients.

There is in the literature no unanimity of opinion regarding treatment. Some authors (Falls³) feel that conservative treatment is best, preferring to wait with operations until after delivery. Other clinicians (Hinton⁴) recommend therapeutic abortion in severe

cases. Theilhaber⁵ found that the majority of cases of toxic goiter were made worse by pregnancy and felt so strongly about it that he said, "Girls with exophthalmic goiter, no marriage; women, no pregnancy; mothers, no nursing."

Crotti⁶ stated that medical treatment is justifiable, for a time, but that the surgeon should not wait until the symptoms become serious enough to endanger the life of both the mother and child. In his opinion, thyroidectomy is the ideal procedure. Yokam⁷ felt that conservative measures should be employed unless the symptoms were of increasing severity, when thyroidectomy was to be preferred to induced abortion. In Fahrni's⁸ opinion a properly conducted thyroidectomy is much to be preferred to an interruption of pregnancy. However, he advised against thyroidectomy in the latter three months of pregnancy.

From the Hertzler Clinic and Hertzler Research Foundation.

Clute and Daniels⁹ reviewed the results of 18 cases seen at the Lahey Clinic. In 15 cases, thyroidectomy was performed during pregnancy. There was only one miscarriage, eight days after operation. Gardiner-Hill¹⁰ found that termination of pregnancy complicated by toxic goiter was unsuccessful in 54.5 per cent of his patients. Lehman² stated that there is a small group of toxic goiter patients who are able to go through gestation with comparative safety. In another small group the toxic symptoms can be controlled with conservative measures. The third, and by far the largest group, meets with disaster unless a thyroidectomy is performed promptly.

In the Cleveland Clinic, in every case of hyperthyroidism associated with pregnancy, operation is advised regardless of the severity of symptoms or the duration of pregnancy. Of 28 patients operated upon at the Cleveland Clinic, all except five went to full term. One patient who suffered from acute hyperthyroidism died of heart failure one month after thyroidectomy.

Brandes¹ reported on 94 cases of thyroid disease complicated by pregnancy observed at the Mayo Clinic. Over three-fourths of the toxic goiters antedated pregnancy, and slightly one-half of the non-toxic goiters showed a marked increase in size during pregnancy. Therapeutic abortion was not performed in any of his cases. All 94 patients had thyroid operations. Two postoperative deaths occurred. Spontaneous abortions attributable to hyperthyroidism or thyroid surgery occurred in 4 of the 94 patients.

The indications of the Mayo Clinic for surgical management of goiter complicated by pregnancy are the following: (1) exophthalmic goiter which is not adequately controlled after a two or three weeks' trial period of iodine therapy; (2) all nodular toxic goiters until six weeks from term and even then if the

basal metabolic rate has been over 50 per cent for a long period or if myocardial damage is present, and (3) non-toxic nodular goiters which are large enough to cause symptoms such as dyspnea from tracheal pressure. Brandes observed premature labor in three patients with diffuse toxic goiter and in five patients with toxic adenoma. Normal term pregnancies were observed in 81 per cent of his diffuse goiter group and 76.5 per cent of the toxic adenoma group. Improvement after thyroidectomy was noted in all cases except two.

Incidence: From 1925 until 1951, 27 patients with goiter complicated by pregnancy underwent operation in the Hertzler Clinic. During these 26 years, there were 8,092 goiter operations and 1,238 deliveries.

Age: The ages of the 27 patients varied between 18 and 41 years, and the average age was 28 years. Patients with diffuse goiter were about five years younger than those with nodular goiter. The average age of patients with nodular colloid goiter was 29.7 years against 25 years for those with diffuse goiter. The oldest age group (35 years average) had fetal (small follicular) adenomas.

Duration: Most of our patients (16) were multigravidae, while 11 patients (five diffuse and six nodular goiters) underwent thyroidectomy during their first pregnancy. A fetal adenoma in a 41-year-old patient was removed during her seventh pregnancy. One patient was in her sixth and two in their fifth pregnancies at the time of operation.

Enlargement of the neck was present from four weeks to 20 years before admission. In most cases (23), enlargement of the neck antedated the current pregnancy, and in only one-sixth of the cases did the onset of goiter occur during pregnancy.

Thyrotoxic Symptoms: Twenty-one of our 27 cases were regarded as toxic; in 12 instances a diffuse toxic goiter and in nine a nodular toxic goiter was diag-

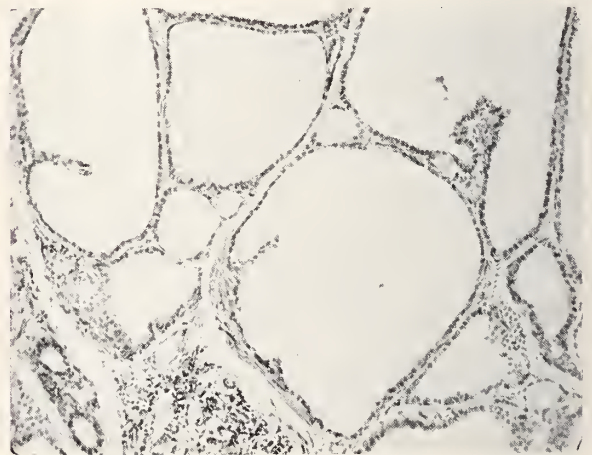
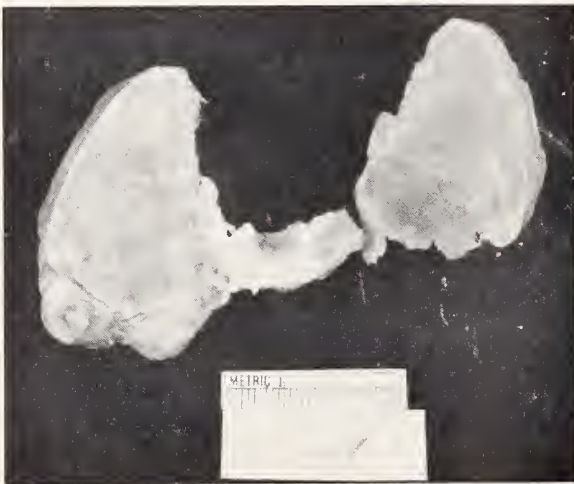


Figure 1. A. Diffuse colloid goiter, 42 grams, of 31-year-old, four months pregnant. Goiter noticed since first month. No eye signs, nervousness, tremor, or rapid heart. B. The follicles are wide, contain thin colloid. The epithelium is cuboid.

TABLE I
Different Types of Surgical Goiters (Hertzler Clinic)

A. Non-pregnant Patients (2380 cases) Year: 1929-1950		B. Pregnant (27 cases) Year: 1929-1950	
	Per cent		Per cent
Diffuse colloid goiter	14	.....	18.5
Exophthalmic goiter	26	.....	22.2
Lymphadenoid goiter	3	.....
Multinodular colloid goiter	33	.....	25.9
Colloid adenoma	17	.....	26
Fetal adenoma	7	.....	7.4
TOTAL	100%	TOTAL	100.0%

In the same locality, the percentage of the different types of goiter is the same, whether the patient is pregnant or not. Significant is the preponderance of colloid-rich goiters, typical for regions with low goiter incidence.

nosed. Nervousness, tachycardia with palpitation, and weight loss were the three most constant symptoms. This triad was present in 16 of the 21 toxic patients. The average weight loss of these 16 patients was 20.2 pounds. The average duration of hyperthyroidism on admission was 12 months. True exophthalmos occurred in six patients, and neck enlargement was present in every case. Only one patient had auricular fibrillation; she was 41 years old and had a colloid adenoma.

All our toxic patients had symptoms before the current pregnancy. In most instances the symptoms

became more severe during pregnancy. In no case could an improvement of the toxic symptoms due to pregnancy be demonstrated. Only two patients suffered from severe vomiting, one had a colloid adenoma, and another an exophthalmic goiter. The basal metabolic rate on admission was above 28 per cent in exophthalmic goiter, 26 per cent in diffuse colloid goiter, and 45 per cent in follicular toxic adenoma.

Treatment: In 12 toxic cases, preoperative preparation included administration of Lugol's solution. The patients with exophthalmic goiter (three cases), diffuse colloid goiter (three), colloid adenoma (five), and multinodular colloid goiter (one) showed definite regression of toxic symptoms after one or two weeks of Lugolization. We did not give thiouracil to pregnant patients because undesirable side effects on mother and fetus have been reported in the literature.

Operation: In the majority of cases (20) bilateral subtotal thyroidectomy was performed. In six lobectomy was done, and in one case arterial ligation only. Ten patients underwent thyroidectomy in their third month of pregnancy, six in their fourth month, five in their second month, and three in the first month. Only one patient was operated upon in the eighth

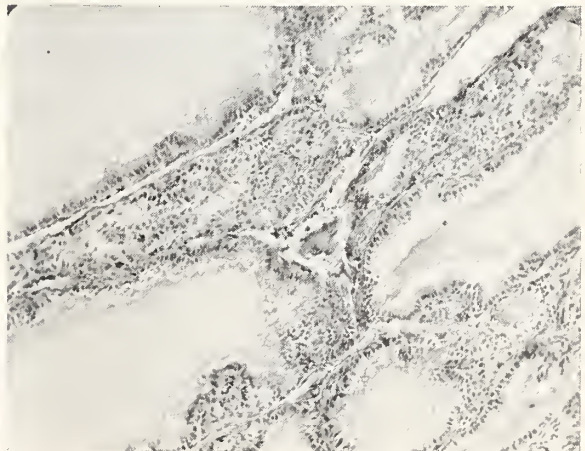
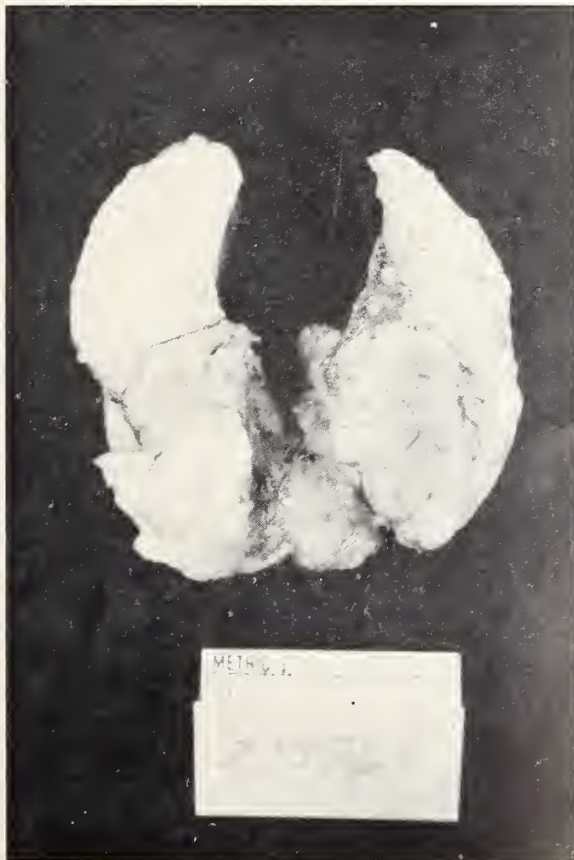


Figure 2. A. Exophthalmic goiter (44 grams) of 18-year-old primipara. Operation in second month of pregnancy. Patient had lost 10-12 pounds in spite of great appetite. B. The papillary epithelial proliferation—in spite of Lugolization—is evident.

month. The only fatality in our series occurred in a 31-year-old patient with slight exophthalmos, a pulse rate of 196-132, and severe vomiting of pregnancy. She had lost 25 pounds during pregnancy. Lobectomy was performed in the third month of pregnancy for a colloid adenoma. The immediate postoperative course was uneventful in the hospital, and she was discharged markedly improved on the tenth day. She died of cardiac failure and respiratory infection two months later.

Follow-up: Spontaneous abortion occurred in a three-month pregnancy, nine days after thyroidectomy. One patient, after removal of a toxic diffuse colloid goiter, gave premature birth to a living newborn. In another premature delivery of a patient with nodular colloid goiter, the baby lived only a short time. One patient with toxic colloid adenoma had a stillborn child following thyroidectomy. The only malformation, a mongoloid child, was born to a 23-year-old patient with diffuse and adenomatous toxic colloid goiter.

Recurrences: A 34-year-old patient, who had a toxic colloid nodular goiter removed, developed toxic symptoms, especially cardiac complaints, after two following pregnancies. A 28-year-old patient had a mildly toxic diffuse colloid goiter removed during the third month of pregnancy. She was well for 1½ years, then lost 15 pounds, became nervous,

and suffered from tachycardia. A 21-year-old patient had a bilateral thyroidectomy for exophthalmic goiter. She remained cured for six years after operation, when the neck began to enlarge again without causing toxic symptoms. Blood protein bound iodine was at this time 5 micrograms, and operation did not seem indicated.

Pathology: The weight of the surgical specimens varied between 25 and 426 grams. The weight of the exophthalmic goiters was between 25 and 44 grams, of diffuse colloid goiter 35 to 42 grams. The multinodular colloid goiters had a weight of from 155 to 426 grams. The weight of the colloid adenomas varied between 35 and 174 grams.

In six instances the histological diagnosis was exophthalmic goiter; in five, diffuse colloid goiter; in two, fetal (small follicular) adenoma. Foci of chronic thyroiditis were found in 11 of the 27 goiters, an incidence of 40.7 per cent. It occurred in four exophthalmic goiters, four diffuse colloid goiters, two colloid adenomas, and two nodular colloid hyperplasias. In comparison, in a series of 75 non-pregnant patients, 65 per cent of the surgical goiters showed areas of thyroiditis.

SUMMARY AND CONCLUSIONS

1. It is unusual to encounter a pregnant patient with a goiter requiring surgical removal during pregnancy. In the Hertzler Clinic only 27 cases of goiter in pregnancy have been operated upon during a 25-year period.
2. Most of our patients were multiparous. All our toxic patients had symptoms before the current pregnancy. We did not observe an improvement of the patients' condition during pregnancy.
3. If, after a three-weeks' trial period of iodine therapy, toxic symptoms remain unimproved, partial

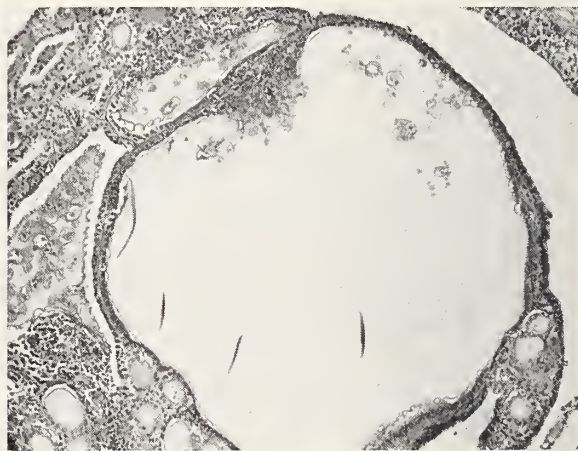


Figure 3. A. Colloid adenoma in right lobe of goiter of 38-year-old patient, four months pregnant. Patient lost 40 pounds. B. Histological examination shows some epithelial proliferation and areas of thyroiditis. The toxic symptoms disappeared after bilateral subtotal thyroidectomy.

thyroidectomy after preoperative treatment with Lugol's solution is the treatment of choice in toxic goiter regardless of duration of pregnancy.

4. In nodular goiter with pressure symptoms or with myocardial damage, antithyroid drugs and radioiodine therapy are not recommended, and thyroidectomy is indicated as early as possible.

5. Thyroidectomy controlled toxic goiter and relieved pressure symptoms in pregnant women as satisfactorily as in non-pregnant patients.

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Polyarteritis Nodosa and Cortisone

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Cairo, Egypt

The following case is reported in order to demonstrate that cortisone is of great help in diagnosis and treatment of collagen diseases, including polyarteritis nodosa. It is also important for demonstration of the power of cortisone in making such patients' wounds heal rapidly under antibiotic cover, and to show that the absence of focal symptoms or eosinophilia must not rule out the possibility of affection by this disease.

CASE REPORT

A male university student aged 23 years, athletic, originally from El Koweit, was seen on April 27, 1952, complaining of fever, sweating, vague pains in his legs, and mild prostration. With a temperature of 39 degrees C. and pulse of 80 per minute, his heart, chest, abdomen, and joints were clinically normal.

His past history included urticaria on and off for 12 years, which stopped only three years before; rheumatic fever four years previously, and gonorrheal urethritis two years previously treated by sulphadiazine and penicillin. The rheumatic fever recurred in February of 1952.

In his present state Widal, agglutination for Malta fever, film for malaria, and blood culture were negative. The leucocytic count was 16,800, neutrophils 57 per cent, lymphocytes 17 per cent, monocytes 8 per cent, eosinophils 0 per cent, basophils 10 per cent. Erythrocyte sedimentation rate was 96 mm. in one hour.

He was diagnosed as having rheumatic fever. With salicylate therapy his condition ameliorated for about four weeks.

On June 11, 1952, the fever with rheumatic pain recurred but did not respond to salicylates, which even became intolerable in two days and had to be stopped. The fever did not respond either to antibiotics or to antimalarial treatment and responded only to cortisone over a 10 days' course. Apart from the high erythrocyte sedimentation rate (99 mm. in one hour) and leucocytosis, all laboratory investigations were again negative. Chest x-ray was also normal.

The condition remitted for 15 days, then flared up again with the same picture. In addition left iritis supervened, responding only to cortisone. Laboratory findings were all normal.

On September 10, 1952, the same condition recurred. In consultation with my colleagues, the patient was examined and the following report was made: temperature 38.5 degrees C.; pulse 104; blood pressure 135/75; consciousness perfect; heart normal apart from systolic pulmonary murmur; chest free, abdomen free; prostate neither tender nor enlarged; no nodes or swellings felt in the body; joints not affected. Apart from mild tenderness of calves, there were no neurological manifestations.

X-rays of heart, chest, urinary tract, teeth, and all bones of skeleton were normal. The diagnosis made was queer disease of rheumatic nature allied to collagen disease, possibly polyarteritis nodosa or lupus erythematosus without skin manifestations. Recommended treatment was cortisone with prolonged

The author is assistant professor of medicine, Abbassiah Faculty of Medicine. His interest in the Kansas Medical Society and the JOURNAL stems from his friendship with the late Dr. F. R. Croson, Clay Center.

maintenance dose and in a few weeks combination with ACTH.

On October 8, 1952, he developed acute tonsillitis and was seen by the specialist, who gave the following report, "The acute phase is subsiding, but it is definitely a case of chronic suppurative tonsillitis. I do think that removal of his tonsils will benefit a lot."

On October 17, 1952, tonsillectomy was done after stopping cortisone, but penicillin ($\frac{1}{2}$ million units 6 hourly) was continued. On the following three days he had mild pyrexia, which was considered postoperative, yet in the next seven days he ran a hectic fever, rising to 41 degrees C. in the evening and not responding to aspirin, aralen, sulphadiazine, nor to penicillin and streptomycin. The wound became sloughing, septic, and angry looking. Cortisone with adventure was given (75 mg. per day with penicillin cover). The temperature came down to normal next day, and the wound healed rapidly in three days. He was kept on cortisone therapy, enjoyed a sense of well being, and put on weight.

On November 6, 1952, he was seen again in consultation, and the following report was made, "Thorough investigations have been carried out without, however, disclosing any positive etiological or specific finding apart from an increase in the white cells and in the erythrocyte sedimentation rate, which are not specific to any particular illness.

"In view of the fact that the only drug that has so far proved of any value, not only in abating the symptoms and fever but also in favouring healing processes as exemplified in the post-tonsillectomy period, is cortisone, we recommend continuance of this therapy in maintenance doses of 75-100 mg. daily, or otherwise according to the response of the patient and judgment of the treating doctor, for at least two months and under constant medical control for fear of the known complications of this drug."

He was discharged from the hospital on November 9, 1952, and recommended to continue cortisone therapy.

On February 23, 1953, I was called to see him outside. He had stopped cortisone since his discharge and evidently his illness recurred. Suspected diaphragmatic abscess was excluded by the fact that any inflammation would have flared up under cortisone therapy, and in spite of this plain argument a puncture was made which was negative. I was told that he had recently had repeated attacks of diarrhea for which he took sulfaguanidine and enterovioform.

His blood picture was: red blood count 5,160,000/c.mm., hemoglobin 83 per cent, color index 0.8, white blood count 31,900, polys 79 per cent, lymphocytes 11 per cent, monocytes 10 per cent, basophiles 0 per cent, eosinophiles 0 per cent. There was a marked leucocytosis, polymorphic in nature, with marked degree of shift to the left and toxic changes,

a mild monocytosis, platelets abundant in the film.

Cortisone, after being withheld for about three months, was resumed on February 24, 1953. On the next day oedema of legs developed but the liver and heart were normal and there were no engorged neck veins. Urine showed a trace of albumin; his bowels were loose. The oedema gradually increased and his face looked puffy. Blood pressure was 140/90, and he rapidly became nephrotic.

Report of urine examination on March 4, 1953, was: volume 2760 cc.; specific gravity, 1.006; albumin two plus; microscopically a moderate number of granular casts.

On March 5, 1953, the maintenance dose of cortisone was stopped, and the treatment then was enterovioform, sulfaguanil, glucose intravenously, antihistaminics, and vitamins C and K with limitation of fluid and a salt free diet.

On March 14, 1953, the patient became exhausted and was lying quietly, yet was clear. Urine became suppressed (volume 310 cc.) with specific gravity of 1.025, albumin three plus. Microscopically it contained many hyaline, epithelial, granular, and waxy casts.

On March 19, 1953, the patient was drowsy with marked puffiness. Blood pressure was 140/90, blood urea 232 mg. per cent, blood proteins 6.6 g., erythrocyte sedimentation rate 130 mm. in one hour.

On March 22, 1953, he was in coma and complete anuria. Intramuscular cortisone and ACTH were ordered in consultation, yet he died ultimately of renal failure the next day.

DISCUSSION

This case represents essentially a classical type of one of the various, yet allied, clinical conditions known as "hypersensitivity reactions in man" or collagen diseases. These are either pathological reactions of the body to an antigen, commonly drugs or bacteria, or the response of the body to prolonged stress. The capricious localization in some organs of the response to these antigens, or of the prolonged stress, is expressed clinically by the many forms of the disease in man, such as polyarthritis, endocarditis, periarteritis nodosa, glomerulonephritis, lupus erythematosus disseminatus, Leibman-Sack disease, urticaria, angioneurotic oedema, etc., and as is known these diseases may occur in numerous combinations.²

The diagnosis of this case as polyarteritis nodosa has been made by the clinical picture, the exclusion of other allied conditions, the response to cortisone, and the inevitable fatal issue.

In polyarteritis nodosa, there is predilection of affection of the medium-sized arteries, especially those of the muscles, gastrointestinal tract, kidneys, heart, and peripheral nerves. The symptomatology will therefore be an expression of one or more of these focal affections, together with the symptoms

and signs of the general reaction of the body to tissue disintegration.

We can therefore classify the symptomatology into two groups:

Group I—Focal, resulting from the vascular occlusion. Among these are muscular pains, subcutaneous nodules, renal, gastrointestinal, cardiac, and neuritic manifestations.

Group II—General. These are common reactions of the body to tissue disintegration, such as occur in infarctions in any part of the body, typified by cardiac ones. These general reactions include pyrexia, prostration, sweating, loss of weight, high erythrocyte sedimentation rate, and leucocytosis.

In the early stages of the disease, these general reactions are of notable importance in diagnosis. In any patient with prolonged pyrexia, prostration, and a high sedimentation rate, the diagnosis of polyarteritis nodosum must be on the mental list, especially if combined with vague muscular pain.

Again, in the very early stage of the disease, amelioration under salicylate therapy must not be a pitfall. Such improvement may be a natural remission of the disease, or due to salicylates releasing an amount of ACTH, small, yet sufficient for combating the early manifestations of the disease.⁷ It has also been postulated that the chief pharmacological activity of salicylates is in some way related to the metabolism of corticosteroids; similar clinical and biochemical changes occur with the administration of salicylates, cortisone, and ACTH.¹

From the diagnostic point of view, after a thorough clinical, laboratory, and radiological investigation, cortisone administration for two to three days with a satisfactory response must be considered a useful therapeutic test. It was so considered in our case.

Again, in the early stage of the disease, stress on focal symptoms must not be wholly depended upon. As Boyd says, "Nodules are found in less than 50 per cent of the cases and eosinophilia only in about 10 to 20 per cent."³

As the disease advances, it is quite possible to see various combinations of the focal manifestations whether superficial in the muscles and skin or deep in the organs such as kidneys, intestines, and heart. Renal failure in particular is the common ultimate cause of death. In some cases it is hard to draw a dividing line between acute nephritis and polyarteritis nodosum.⁴ The terminal stage of this case is a classical demonstration of this phenomenon. In fact such

tissue reactions provoke monocytosis rather than eosinophilia, since the first cells are concerned with phagomonocytosis of the antigenic factor, mainly foreign proteins. These phagocytes may then carry sensitivity widely through the body. The functional activity of these mononuclear cells is probably controlled by the circulating hormones—cortisone and ACTH—which diminish their number.⁹ The relative monocytosis and the absence of eosinophilia in our case verify such conclusions.

From the point of view of treatment, cortisone has to be started early if the disease is manifest or even if suspected; otherwise, if started late, the healing of the affected vessels will provoke serious visceral infarctions.⁶ As is noted, our patient stopped cortisone therapy for about three months, and, with resumption of therapy, the condition deteriorated very rapidly with progressing renal failure.

A third important point is that the healing of wounds of this patient was markedly delayed, and it is astonishing that cortisone, which is contraindicated in wounds, finds a bold therapeutic choice in these cases, as shown by the rapid healing of the posttonsillectomy wounds. It is possible that cortisone has a bearing in correction of the local concentration or quality of mucinous substances which appear before the formation of collagen in healing wounds.⁵

SUMMARY

A case, presumably of polyarteritis nodosum, is described. In diagnosis the general manifestations, especially fever and prostration with vague muscular pains, are important. After investigation, cortisone can be used as a therapeutic test.

In treatment, once the disease is suspected, cortisone has to be continued. Otherwise, in the last stages, the possibility of hastening visceral infarctions will be an eminent danger. A further interesting point is that cortisone hastens healing of wounds in these cases.

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CHANGE OF ADDRESS

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Help keep the mailing list up to date.

PRESIDENT'S PAGE

DEAR DOCTOR:

As a country doctor of sedentary habits I am constantly amazed at the demands made on the president of the Kansas Medical Society. Even if I had the ability I would not want to imitate Morris Fishbein's diary of famous foods and famous faces, but for the benefit of Clyde Miller and others who may aspire to the delightful job I now hold I will enumerate some of the odd requests encountered in two months.

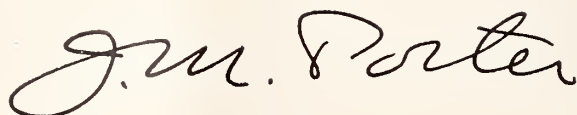
A publication of one of the Kansas veterans' organizations asked for a picture and a short article. These were furnished—the picture being the best I could do and the article trying to indicate some of the pitfalls of indiscriminate federal care. I have had no word from the organization since I submitted this material although I know indirectly it was published as I prepared it.

The most recent request is for an endorsement of the Boy Scout movement. I should think there would be no question about this and that even the professional politician would be "for" the Scouts just as he is "against" the man-eating shark.

June 2, 1,500 members of 4-H Clubs from all over Kansas and I shared 750 barbecued chickens at Rock Springs Ranch, and in return for this hospitality I turned two shovelsful of dirt at the location of their new health center, part of a \$40,000 gift from Mr. A. D. Jellison of Junction City. The chance to get acquainted with this fine group of youngsters, their magnificent summer camp, and the remarkable 4-H Club movement was a happy and eye-opening experience.

Visits with the governor of the state, conferences with the delegates from the Kansas Medical Society to the American Medical Association, parlies and correspondence and telephone calls with politicians both within and without the profession, "appearances" at 50-years-of-practice celebrations, lunches with Rotary Clubs, etc. round out this series of obligations and can be faced with mixed emotions. One very pleasant trip to Wichita involved a meeting of the Wichita Foundation of Medical Research and an excellent address on radiation injuries. Another was a lunch in Topeka with the Tuberculosis and Health Association.

In addition to all this, a "President's Page" must be prepared every month—at least until I can get more votes to abolish it. At any rate, this job is completed for another month.

A handwritten signature in cursive script, reading "J. M. Porter". The signature is written in dark ink and is positioned at the bottom center of the page.

EDITORIAL COMMENT

CULTS

Misunderstanding of words is the treachery of language. Failure to convey an intended impression has caused a sizable part of this world's trouble. The speaker is probably as often at fault for his uncritical evaluation as is the listener for his incorrect reception.

An example of both is medicine's use of the term "cult." To the physician this may be a vaguely defined expression implying lack of scientific understanding. Its connotation reflects inferiority. It is applied with condescension. But sizable segments of the public accept the word as a mark of distinction, either on the basis of persecution or exceptional ability. The intended effect is reversed and a warning in the public interest becomes an advertisement that perpetuates its existence.

The definition in the Code of Ethics of the American Medical Association is not difficult to understand. "A sectarian or cultist as applied to medicine is one who alleges to follow or in his practice follows a dogma, tenet or principle based on the authority of its promulgator to the exclusion of demonstration and scientific experience."

The public cannot be expected to have an intuitive perception of what constitutes scientific experience, but dramatic examples are available that certainly cannot be contested. Should a present day group subscribe to a flat world theory, that would be a cult in the mind of every thinking person. To deny the existence of bacteria, or to oppose immunization procedures, or to declare that aluminum cookware causes cancer, represents cultist dogma that is readily understandable.

Chiropractors testified before a Kansas legislative committee of their disdain for diagnosis because human illness is impossible when the vertebrae are aligned. Scientific experience is completely ignored when one treatment procedure is credited with versatility sufficient to overcome the complete range of human illness, and that is cult thinking.

The so-called "osteopathic concept" is similar. Andrew Taylor Still, founder of osteopathy, cried long and loud against the practice of surgery and the use of drugs.

He said, "Adjuncts are not necessary to the osteopath. . . . If he is an up-to-date osteopath, his hand is his thermometer; his hand is his syringe. An osteopath kills diphtheria, worms, with the club of reason dipped in pure arterial blood."

He said, "We are opposed to the use of drugs as remedial agencies. We are opposed to vaccination. We are opposed to the use of serums in the treat-

ment of disease; nature furnishes its own serum if we know how to deliver them."

He said, "Osteopathy is based on the perfection of Nature's work. When all parts of the human body are in line we have health. When they are not, the effect is disease. When the parts are readjusted, disease gives place to health. The work of the osteopath is to adjust the body from the abnormal to the normal; then abnormal condition gives place to the normal and health is the result of the normal condition."

Today's osteopath is embarrassed by his ancestry. He wants to practice scientific medicine but is haunted by the ghost of Andrew Taylor Still. His right hand tries to perform surgery while with his left he surreptitiously clings to his founder. He adds to his scientific medicine a benediction in the laying on of hands. The patient is led to believe he has received something extra—a touch of magic, a voodoo sign.

The A.M.A. Committee for the Study of Relations Between Osteopathy and Medicine explained this more adequately to the House of Delegates at Atlantic City in June. On the subject of "osteopathic lesions" the report said in part:

"The exact nature of these 'lesions' is not known. They are non-fatal and non-surgical and their microscopic structure has not been studied. The results of efforts to produce them experimentally have not been satisfactory. . . . Under certain circumstances it is hoped that the blood supply to the affected parts may be improved by reflex action.

"Manipulative therapy is used as an adjunct to and not as a substitute for accepted measures of treatment. . . . Some use it frequently, some infrequently and some not at all. None consider it, per se, to be definitive or curative therapy in disease states. . . .

"The 'lesion' does not cause organic disease and its correction alone does not cure organic disease. . . .

"The faint aura of cultism which clings to osteopathic teaching arises out of the past. It persists because of efforts by some members of the profession to explain the results claimed for manipulative therapy on the basis of unproven physiological concepts, a tendency to use confused and ambiguous terminology and a fairly widespread failure to apply critical evaluation to results. It does not result from the present beliefs, teachings and practices of the vast majority of faculty members of the colleges of osteopathy."

The last sentence was included because its omission would have opened the charge that the quotations were unfair. And yet, that last sentence confirms the argument. Osteopaths bravely embrace the scientific developments of the medical profession, but fear to divorce their superstitions.

So they are cultists. And so they were declared to be by the A.M.A. House of Delegates last month.

The A.M.A. voted "(1) That the report of the

Committee for the Study of Relations Between Osteopathy and Medicine be received and filed; and that the Committee be thanked for its diligent work, and be discontinued.

"(2) That if and when the House of Delegates of the American Osteopathic Association, their official policy making body, may voluntarily abandon the commonly so-called 'osteopathic concept,' with proper deletion of said 'osteopathic concept' from catalogs of their colleges; and may approach the Trustees of the American Medical Association with a request for further discussion of the relations of Osteopathy and Medicine, then the said Trustees shall appoint another special committee for such discussion."

It is all right for the ball player to indulge in a rite for the sake of good luck, but the scientific physician simply does not perform an incantation to speed penicillin upon the successful performance of its task.

Whenever he insists upon that, he is a cultist and no amount of respect for whatever else he may do or know how to do can erase it.

Review this one more time! The "osteopathic lesion" cannot be demonstrated or experimentally produced. Its presence does not cause organic disease nor does its correction cure organic disease. Therefore, the osteopath who knows it means nothing but uses it anyway is a charlatan; the osteopath who believes in it "follows a dogma . . . to the exclusion of demonstration and scientific experience"; and the osteopath who neither believes in the "osteopathic lesion" nor purports to adjust it should disassociate himself from those who do.

As long as the "osteopathic concept" remains a part of its teachings, this school of healing is cultist and osteopaths alone can alter that. Medicine did not place osteopaths in this category, nor is persecution involved. As a matter of fact medicine has carried their reluctant weight in its advance.

It becomes entirely a matter of language and the understanding of words. Science gathers facts and fits the answer into the findings. Cults begin with an answer which they try to support with findings.

Once the public understands this and senses its impact upon health, medicine should no longer need to concern itself with the question of osteopathic rights. The next move, if there is to be a next move, must come from the other side.

A.M.A. CONVENTION

Several actions of exceptional importance were taken by the House of Delegates at the recent A.M.A. meeting in Atlantic City. A few of the most significant are recorded here.

Elmer Hess, M.D., of Erie, Pennsylvania, was installed as president, and at the closing session the

following officers were elected: Dwight H. Murray, M.D., Napa, California, president-elect; Millard D. Hall, M.D., Raleigh, North Carolina, vice-president; George F. Lull, M.D., Chicago, secretary; J. J. Moore, M.D., Chicago, treasurer; E. Vincent Askey, M.D., Los Angeles, speaker of the House of Delegates; Louis M. Orr, M.D., Orlando, Florida, vice-speaker; Gunnar Gundersen, M.D., La Crosse, Wisconsin, chairman of the Board of Trustees.

The Committee to Study the Relations between Osteopathy and Medicine submitted a 25-page report of its findings after visiting five of the six schools of osteopathy. It stated that osteopaths are seriously attempting to raise standards and are quite closely following requirements of schools of medicine. The "osteopathic concept" although still in evidence is relegated to a position of minor importance in the curriculum. The report recommended that the cultist appellation be removed from osteopathy, that doctors of medicine be invited to accept faculty positions in osteopathic colleges, and that the various state medical societies rule individually upon the degree of local co-operation that shall exist between the two groups.

This report was referred to the Reference Committee on Medical Education and Hospitals. They held hearings and with one dissenting voice recommended to the House of Delegates that they were "not completely satisfied that the current education in colleges of osteopathy is free of the teaching of 'cultist' healing" but approved that doctors of medicine teach in their schools and that doctors of osteopathy be permitted to enroll in graduate courses offered by schools of medicine and that the joint committee effort be continued. This resolution was defeated by the House of Delegates.

The dissenting committee member then submitted his minority report as follows: "One member of the Reference Committee was completely satisfied that an appreciable portion of the current education in colleges of osteopathy definitely does constitute the teaching of 'cultist' healing, and is an index that the 'osteopathic concept' still persists in current osteopathic practice. Since he cannot with good conscience approve the recommendation that doctors of medicine teach in osteopathic colleges where 'cultism' is part of the curriculum, he respectfully makes the following recommendations to the House of Delegates:

"1. That the report of the Committee for the Study of Relations between Osteopathy and Medicine be received and filed; and that the committee be thanked for its diligent work, and be discontinued.

"2. That if and when the House of Delegates of the American Osteopathic Association, their official policy-making body, may voluntarily abandon the commonly so-called 'osteopathic concept,' with proper deletion of said 'osteopathic concept' from catalogs

of their colleges; and may approach the Trustees of the American Medical Association with a request for further discussion of the relations of Osteopathy and Medicine, then the said Trustees shall appoint another special committee for such discussion."

Section 8 of the Code of Ethics was re-written by action of the House of Delegates. This has been under discussion for some time and was amended a year ago to make it unethical for a physician to dispense drugs or operate a drug store in a locality where such services are otherwise available unless approval is obtained from the county medical society of the area involved.

At Atlantic City this position was reversed. Section 8 now reads, "It is not unethical for a physician to prescribe or supply drugs, remedies, or appliances so long as there is no exploitation of the patient."

The House of Delegates cautioned, however, that this section should be interpreted in line with Chapter I Section 6 which says, "The ethical physician, engaged in the practice of medicine, limits the sources of his income received from professional activities to service rendered the patient. . . ."

Numerous resolutions were received on the subject of hospital accreditation. After some conflict the reference committee recommended that the speaker of the House appoint a special committee of seven members, none of whom shall be on the A.M.A. Council of Medical Education or on the Joint Commission on the Accreditation of Hospitals, which shall make an independent study and survey and report at the next annual meeting. All physicians and hospitals were invited to submit information pertinent to the question under study. This resolution was adopted.

Among the many other items acted upon at this meeting were: a recommendation that the United States withdraw from the International Labor Organization, a voice of opposition to extension of the doctor draft law, and a note of warning that the legislatures in some states have studied bills to restrict the entire field of visual care to the profession of optometry.

The medical license of Edwin O. Squire, M.D., Coffeyville, was revoked by the Kansas State Board of Medical Registration and Examination on June 9, 1955, following his arraignment before a court in Montgomery County on a charge of having performed a criminal abortion.

We must translate health into the attitudes and behavior patterns of the many if we are to have clean and healthy communities.—*Henry F. Vaughan, M.D., Am. Jnl. Pub. Health, March, 1955.*

SEDGWICK COUNTY SOCIETY ELECTS

The following officers to serve in 1956 were chosen by the Sedgwick County Medical Society at a meeting held in Wichita last month: president, Dr. J. Philip Berger; vice-president, Dr. William J. Reals; secretary, Dr. James H. Holt; treasurer, Dr. Dean A. Huebert; censor, Dr. Lloyd P. Warren. Elected to three-year terms on the board of directors were Dr. George E. Cowles, Dr. George L. Thorpe, and Dr. Lawrence E. Vin Zant.

VISITING PROFESSOR IN MANILA

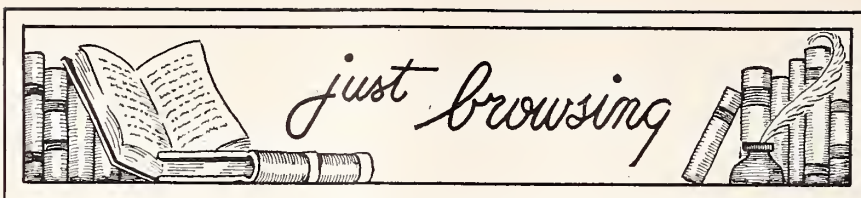
Dr. Ralph H. Major, professor of medicine and of the history of medicine at the University of Kansas School of Medicine, will become emeritus professor this month and has accepted an appointment as visiting professor of medicine and honorary chief of the department of medicine at the University of Manila, Philippine Islands.

Dr. Major will go to Manila in the fall and plans to spend one semester there. He and Mrs. Major will then take a world cruise before returning to Kansas City, where he will continue cataloguing the extensive and valuable Library of the History of Medicine, one of the four great history of medicine libraries in the United States.

HEART ASSOCIATION ELECTS

Dr. G. Loren Norris, Winfield, became president of the Kansas Heart Association at its annual meeting held in Topeka on June 5. Dr. D. R. Bedford, Topeka, was named president-elect and will also serve a two-year term as delegate to meetings of the American Heart Association. Mrs. John C. Nelson, Topeka, was re-elected vice-president; Mr. Frank Sullivan, Lawrence, secretary, and Mr. Willard J. Breidenthal, Kansas City, treasurer. It was announced at the meeting that the retiring president, Dr. Clarence W. Erickson, Pittsburg, recently became a member of the executive board of the American Heart Association.

"Emotional disturbances and physical illnesses which have a significant psychological component are among the commonest causes for poor attendance," said Dr. S. Mouchly Small, of the University of Buffalo School of Medicine, in an address given during a recent Industrial Health Conference in New York. "Our greatest problem in industry today is not production but people."



The world measures success by a number of yardsticks. For some amassing wealth is the goal; for others it will be position and prestige; others desire most to gather by any means at their command, power and control over their fellow men. Fortunately there are, however, more worthwhile standards.

"He has achieved success who has lived well, laughed often and loved much; who has gained the respect of intelligent men and the love of little children; who has filled his niche and accomplished his task; who has left the world better than he found it, whether by an improved poppy, a perfect poem, or a rescued soul; who has never lacked appreciation of earth's beauty, or failed to express it; who has always looked for the best in others and given the best he had; whose life was an inspiration; whose memory a benediction."—*Bessie A. Stanley*.

"A man asked to define the essential characteristics of a gentleman—using the term in its widest sense—would presumably reply, 'The will to put himself in the place of others; the horror of forcing others into positions from which he would himself recoil; the power to do what seems to him to be right, without considering what others may say or think.'"—*John Galsworthy*.

"To be honest, to be kind, to earn a little, and to spend a little less, to make upon the whole a family happier for his presence, to renounce when that shall be necessary and not to be embittered, to keep a few friends, but these without capitulation; above all, on the same condition, to keep friends with himself; here is a task for all a man has of fortitude and delicacy."—*Robert Louis Stevenson*.

"The place to take the true measure of a man is not in the darkest place or in the amen

corner, nor the cornfield, but by his own fire-side. There he lays aside his mask and you may learn whether he is an imp or an angel, cur or king, hero or humbug. I care not what the world says of him: whether it crowns him boss or pelts him with bad eggs. I care not a copper what his reputation or religion may be: if his babies dread his homecoming and his better half swallows her heart every time she has to ask him for a five-dollar bill, he is a fraud of the first water, even though he prays night and morning until he is black in the face and howls hallelujah until he shakes the eternal hills. But if his children rush to the front door to meet him and love's sunshine illuminates the face of his wife every time she hears his footfall, you can take it for granted that he is pure, for his home is a heaven—and the humbug never gets that near the great white throne of God. He may be a rank atheist . . . may buy votes in blocks of five, and bet on the elections; . . . may deal 'em from the bottom of the deck . . . and still be an infinitely better man than the cowardly little humbug who is all suavity in society but who makes home a hell, who vents upon the helpless heads of his wife and children an ill nature he would inflict on his fellow men but dares not. I can forgive much in that fellow mortal who would rather make men swear than women weep; who would rather have the hate of the whole world than the contempt of his wife; who would rather call anger to the eyes of a king than fear to the face of a child."—*W. C. Brann*.

"Success lies, not in achieving what you aim at, but in aiming at what you ought to achieve, and pressing forward, sure of achievement here, or if not here, hereafter."—*R. F. Horton*.

What is your definition of, or goal for, success?—*O.R.C.*

Solitary Metastases of Carcinoma

Tumor Conference

Edited by Bernard Klionsky, M.D., and Harlan I. Firminger, M.D.

Dr. Stowell: The finding of solitary metastases of carcinoma at times signals the presence of cancer. Without pathological examination they are difficult to differentiate from primary carcinoma. Two cases are presented which provided not only problems in clinical diagnosis but also problems in therapy.

CASE NO. 1

Dr. Cashion: This is the case of a 40-year-old white female who has had intermittent mild headaches for the past 10 or 15 years. Two months ago she began having fairly severe suboccipital headaches which were noted when she awoke in the early morning. She would vomit and then she would feel better and remain well through the day. Three weeks ago the headaches became severe and unrelenting and were associated with vomiting throughout the day. These symptoms continued until admission about six days ago. At that time examination of the patient showed her to have bilateral papilledema. She was responsive but disoriented, and over a two-hour period while she was in the hospital she became almost stuporous. There were no localizing neurological signs. There was no history that would suggest a primary malignant tumor elsewhere in the body.

She was admitted late at night and we had some difficulty getting in the operating room for a ventriculogram, so we elected to go ahead with an arteriogram. A right carotid arteriogram was done and it showed evidence of hydrocephalus, but there was no evidence of tumor within the cerebral hemispheres. A ventriculogram was then done and this showed a block of the aqueduct. Accordingly a suboccipital craniotomy was carried out. The left cerebellar tonsil was herniated through the foramen magnum. A needle was inserted into the left cerebellar hemisphere, a tumor was immediately encountered, and material was aspirated. This tumor was then exposed, and a tumor nodule about 2 cm. in diameter, well demarcated from the cerebellar tissue, was totally removed. This had the gross appearance of a metastatic nodule. Postoperatively this patient has done quite well.

A chest film was obtained yesterday, and perhaps it might be interesting to see the x-rays before we see the patient.

Dr. Goertz: The arteriograms Dr. Cashion has already interpreted for you. The ventriculograms reveal dilated lateral and third ventricles. The aqueduct is tapered to a point posteriorly. On all the films the fourth ventricle is poorly seen, or not seen at all. A film taken to show the posterior horns fails to reveal the horn on the right side. Whether that is due to artefact or not, I don't know. The chest films show a rather large irregular mass in the right middle lobe area (Figure 1). This was reported

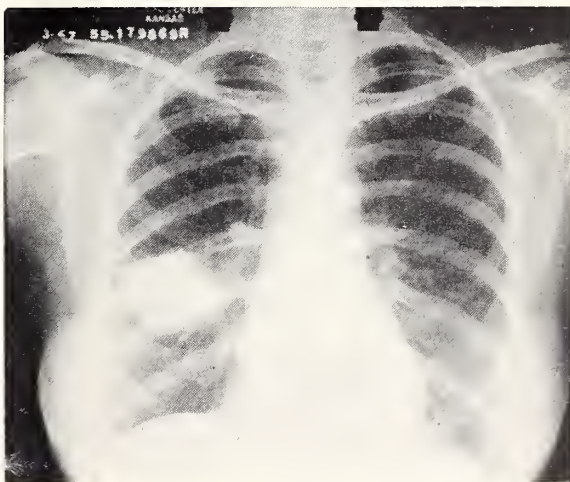


Figure 1. Roentgenogram of chest showing circumscribed density in right lung.

without the report available on the other films, and Dr. Tice suggested that this might be primary in the kidney because kidney tumors are known to have single metastases.

Dr. Stowell: I wonder if we could see the patient now?

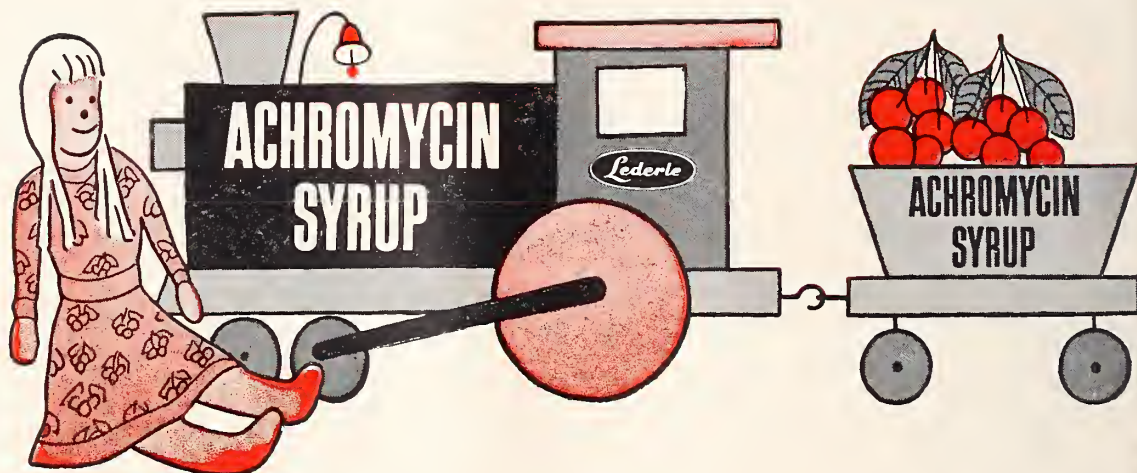
Dr. Cashion: There is not much to show in this patient in the way of neurological findings, and we can only show that she does not have them.

Dr. Brackett: She really has nothing to show. She is still nauseated, but otherwise she has had a good postoperative course. Is there anything anybody would like to see?

Dr. Boley: Does she have any enlargement of the thyroid?

Cancer teaching activities at the University of Kansas Medical Center are aided by grants from the National Cancer Institute, U. S. Public Health Service, and the Kansas Division of the American Cancer Society. Dr. Klionsky is a Trainee of the National Cancer Institute.

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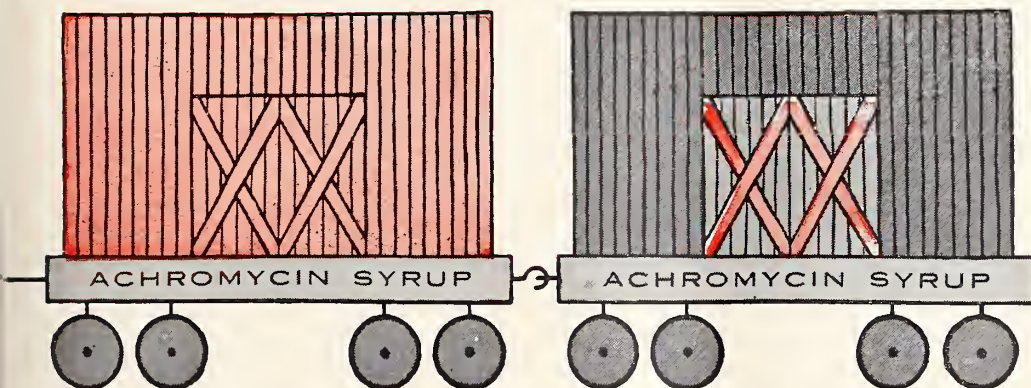
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Dr. Brackett: No, sir.

Dr. Stowell: How long does it take for the papilledema to regress?

Dr. Brackett: Severe papilledema usually regresses over a period of three or four weeks, plus or minus a very wide range.

Dr. Stowell: Would you discuss this case for us, Dr. Brackett?

Dr. Brackett: This is Dr. Williamson's case, but this is not an uncommon problem. A patient arrives with a very high intracranial pressure, no localizing findings, and a short history. In this situation you know you are dealing with an expanding lesion, but you simply do not have time to carry out the gamut of procedures to make an accurate clinical diagnosis. I think we made a mistake in not obtaining a chest film at the time the ventriculogram was done; there is a rule of thumb on this service that all patients when admitted should have a chest film for this reason. However, in this case the patient's condition constituted a neurosurgical emergency. We would have proceeded with craniotomy, even if we had known of the chest lesion.

The arteriogram showed elevation of the anterior cerebral artery without a shift, which is indicative of hydrocephalus. This was confirmed by the ventriculogram, and the aqueduct was blocked. She therefore was considered as a patient who met the requirements for exploration. In general, patients who have high elevations of pressure but no localizing signs usually have a midline lesion, frequently related to the ventricular system. I'm not quite sure about my hemispheres here, but I know one hemisphere looked suspicious, and Dr. Williamson needed it and opened it and could not visualize a tumor. He split the vermis high up and could not find the tumor; then he needed the other hemisphere and this time he did find the tumor nodule and grossly removed it. The chest film which was taken yesterday we have just seen, and I am sure we will have some more comment about that.

Dr. Stowell: Dr. Helwig, will you show us sections of the tumor?

Dr. Helwig: I think you can see it is an anaplastic type of growth, a rather ragged looking tumor with a lot of bizarre nuclei. In some areas it is superficially invading the brain, but it is quite local. The tumor has a tendency to appear in rather large groups of cells, often with huge nuclear forms. There is no pattern here to suggest a vascular component similar to what we ordinarily anticipate finding in the mine run of metastatic hypernephroid cancer. I'm sure you all appreciate here that we are dealing with a highly undifferentiated tumor (Figure 2).



Figure 2. Photomicrograph of metastatic brain tumor showing marked variation and hyperchromaticity of cells. X 115. Hematoxylin and eosin.

Observe, if you will, these huge nuclei with all sorts of massive chromatin granules in them. I am not saying that this isn't possibly an anaplastic type of hypernephroma, but I certainly couldn't say that it was either. Of course, as you know, occasionally in metastasis from hypernephroma the secondary growth is so anaplastic that any suggestion as to its primary source is impossible to make. Percentage-wise, with a solitary lesion in the lung, and a solitary lesion in the brain, your best bet would certainly be renal cell cancer. We can't make any such positive statements from what we see here.

I heard of a patient not too long ago who was operated on at Cleveland Clinic. The patient came in with lesions in the frontal lobe of the brain and in the lung. The patient was operated upon, and they took out the lesion in the brain and then took out the involved lobe of the lung. I found out yesterday that that patient is still alive since the surgery in 1948 or 1949. So it is a worthwhile procedure if both tumors can be completely removed. One solitary lesion in the lung and one solitary lesion in the brain occasionally occur.

Dr. Stowell: Dr. Helwig, would you like to take the kidney out too?

Dr. Helwig: I think you ought to have a urogram and determine her kidney function.

Dr. Cashion: Routine urinalysis was normal.

Dr. Stowell: Is there any further discussion you would like to make, Dr. Brackett?

Dr. Brackett: As far as the chest film goes, the lesion is probably resectable and we don't know

its nature. About 3 or 4 per cent of all solitary brain metastases are the only metastases found in the body from either a lung tumor or some other primary source. Between 25 and 30 per cent of brain metastases from other primaries are solitary tumors. These metastases arrive at the brain as emboli and lodge at the juncture of the gray and white matter. This means that they are frequently easily enucleated. Many lung tumors grow rather slowly. When we can demonstrate a solitary metastasis, it is certainly worthwhile to remove it even though we know we are dealing with metastatic tumor.

The ventriculogram suggests maybe another lesion in this case. I don't know what the feeling was about this at the time the ventriculogram was done, so I can't comment on it. Was there any discussion about this?

Dr. Cashion: No, it was not discussed because it was not constant in all films.

Dr. Brackett: Since she is in her sixth postoperative day, the plan is to investigate her and try to establish the nature of this lesion. Then we will see what other type of surgery should be done or if irradiation should be administered.

Dr. Stowell: Can one rule out the possibility of primary lung tumor on the basis of the radiological picture here, Dr. Tice?

Dr. Tice: No, I don't think so. I reason like Dr. Helwig. She is a woman and has a peripheral tumor in the lung. You would certainly have to think of a primary lung tumor although it is not the most common. However, it isn't too uncommon to have solitary metastases from the kidney, even a big metastasis. My reasoning was that perhaps they were both metastatic. I thought of the kidney as the first possibility. If it is anything else, I don't know what it is, although I can't rule out a primary lung tumor.

Dr. Stowell: If this turns out to be a primary tumor of the kidney with metastases to the lung as well as to the brain, would you have any comments regarding the possibility of doing a lobectomy in such a patient, Dr. Friesen?

Dr. Friesen: Well, I have been guilty of removing solitary metastases which were known to be from the kidney. Very interestingly, metastases may be in bizarre situations. I remember a patient in whom a thyroidectomy was done for removal of a solitary nodule which was found, pathologically, to be metastatic renal cell carcinoma from the kidney. Following this, we took out the kidney, and the patient survived several years and then was found dead.

Another patient with whom I had personal experience had a pulsating mass half the size of the sternum which was biopsied and found to be vascular tumor. The surgeons thought it to be an

aneurysm, but the microscopic sections showed it to be a hypernephroma. I removed the sternum and someone else removed the kidney, and the patient is still alive seven years later but he has a solitary metastasis in the vertebral body. For that patient it has been worthwhile. He has worked seven years and has been healthy.

Solitary lesions of the lung and of the brain have been removed by many surgeons. I think that the main problem now is, first, to prove that it does come from the kidney, and, second, prove that the primary lesion may be removed. Then go after the tumor. This is assuming all of you concerned in this case feel that such an aggressive effort should be made.

Dr. Stowell: Dr. Williamson, what percentage of tumors with which the neurosurgeon is confronted represent metastatic tumors rather than primary brain tumors?

Dr. Williamson: There are a number of series published on that, Dr. Stowell, but they don't mean anything because they merely reflect the particular material at hand. The percentage at a big veterans' hospital is 60 metastatic tumors¹; on the other hand, I am sure that in Dr. Cushing's material² it was a very low percentage. I would think that around perhaps 30 to 35 per cent were metastatic.

Editor's note: This woman's kidneys were subsequently studied and found to be normal. A thoracotomy was then performed. The right lung was removed and found to contain a squamous cell bronchogenic carcinoma of the middle lobe of the lung. No involved lymph nodes were found. Within three weeks after pneumonectomy the patient had recurrence of neurological symptoms. She died at home and no autopsy examination was done.

CASE NO. 2

Dr. Cashion: The second case is that of a 50-year-old white male who was first seen here in 1949 complaining of hematuria. At that time a retrograde pyelogram was done and reported as normal, and the patient was told to report back in six weeks for another examination. The patient did not return at that time, but in 1951 he was seen again with the same complaints. At this time a retrograde pyelogram showed a defect consistent with a tumor of the right kidney. Surgery was advised and was performed by his local physician, who removed a hypernephroma of the right kidney. The patient then did perfectly well until eight days prior to his admission about two weeks ago.

At that time he showed marked weakness of his left foot, and over a period of three days this weakness spread to involve the entire left side of his

body, sparing the face. He had no headaches at any time during his illness. On examination there was a marked left hemiparesis with most involvement in the left foot. He had left hyperreflexia and a left Babinski. Over the period of the next two or three days he developed some hyperreflexia on the right side and a right Babinski. An arteriogram and a pneumoencephalogram were made, localizing the lesion to the right frontal lobe. A craniotomy was done, and a small nodule in the right motor area for the foot was totally excised.

The patient is now six days postoperative and he is not quite well; he still has some hemiparesis, but this is improving.

Dr. Stowell: Does the patient have things we can see?

Dr. Cashion: Yes. He has weakness in the left foot.

(At this point the patient was brought into the conference room and the presence of marked weakness in the left hand and weakness of the left foot was demonstrated to the audience).

Dr. Stowell: Could we see the x-ray studies please?

Dr. Goertz: This is a retrograde pyelogram done in 1949, which shows nice sharp calices. One slightly elongated calyx in the left kidney was felt to be within normal limits.

This is the retrograde pyelogram done in 1951, and the man who reported the film felt that there was a shadow representing an enlarged right kidney and a defect which suggested that there was a tumor or at least some sort of lesion in the right kidney.

The chest film on this admission was reported as normal.

Arteriograms we interpreted as probably normal, although it was suggested that there might be a slight shift of the anterior cerebral artery to the left. On these arteriograms, I believe it was the right carotid which was injected, and there is visualization of the arteries on both sides.

The pneumoencephalograms show a normal third ventricle. The fourth ventricle was seen and was considered to be of normal shape. The only positive findings are blunting and depression of the anterior horns of the lateral ventricles.

Dr. Stowell: Will you show us the slides on this and tell us about them, Dr. Helwig?

Dr. Helwig: I haven't seen this one, but I understand that it is a typical hypernephroma. I think that you can see the rather large clear cells with a tendency to cluster themselves about the blood vessels. I believe you can also see the clear cytoplasm in these cells. I think I would be willing to state that this is a metastatic hypernephroma (Figure 3).

Dr. Klionsky: The only other interesting feature

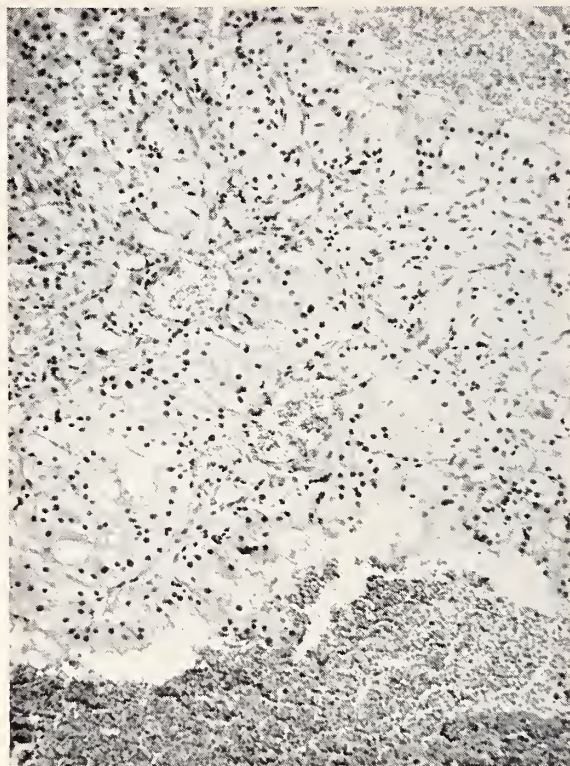


Figure 3. Photomicrograph showing clusters of large clear tumor cells about blood vessels. X 135. Hematoxylin and eosin.

about the slide is that around the periphery of this tumor there is a recognizable thin rim of compressed brain tissue.

Dr. Brackett: Well, I first must discharge an obligation to our residents. Both Dr. Cashion and Dr. Lyons felt that there was a tumor haze on the arteriogram. I did not, but certainly, in retrospect, there is a tumor haze and they were absolutely right. There is a little collection of dye in the location of the tumor which is almost the size of the tumor nodule we found (Figure 4).

Dr. Helwig: How large was the tumor, Dr. Brackett?

Dr. Brackett: It was about the size—I hate to say this and use a fruit for comparison—but it was about as big as a plum.

This case was of interest to us in several regards because of the beautiful localization which this patient had; he was driving down the street in his automobile and he suddenly couldn't press down on his accelerator. The weakness then rapidly progressed up the leg and involved the arm, and just before surgery he had a profound weakness. He had some motion, but it wasn't very much. Otherwise, he didn't have much in the way of findings. However, there is this flattening and depression of the frontal horn. At surgery, the tumor nodule, as I mentioned, was only about the size of a plum and was located

in the quadrate lobule, which is the foot and bladder area. It fitted beautifully with his clinical symptoms. It was surrounded by a great deal of edematous brain. The reason that you have some brain in the section is that I am sure we did a complete removal of the tumor because it was never opened during its removal. I also think that his improvement in strength merely reflects the improvement in the edema rather than removal of the tumor, because his foot is still paralyzed.

The other interesting thing is that this tumor was very vascular. I believe it was also vascular microscopically, and yet it had little in the way of feeding vessels. Bleeding was thoroughly controlled and was coming from the outside, yet when the tumor was needled it was extremely vascular. It is amazing that so much blood could reach this tumor so inconspicuously.

I think this tumor is a solitary metastasis and I think the patient will do very well. His other kidney, incidentally, is free of carcinoma.

Dr. Stowell: Is there other question or comment on this case?

The interval from the time of removal of the kidney and the time of this operation was how long?

Dr. Brackett: Four years.

Dr. Stowell: This is an interesting example of a renal cell carcinoma with apparently a solitary metastasis which will be very interesting to follow, and in which everyone will be pleased if the patient does have a period of productive life following this operation.



Figure 4. Cerebral arteriogram showing haze at the site of the metastatic tumor nodule (arrow).

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DEATH NOTICES

HAROLD HOUSTON JONES, SR., M.D.

Dr. H. H. Jones, Sr., 63, Winfield internist, died at his home on May 30. He had been practicing in Winfield since 1916. He was a graduate of Washington University School of Medicine, St. Louis, with the class of 1915. During World War I he served in the Army, receiving the Silver Star as an award.

Dr. Jones was active in both county (Cowley) and state society affairs and had served as chairman and member of a number of committees, most recently the Committee on Postgraduate Study. He was a diplomate of the American Board of Internal Medicine and a member of the American Heart Association and of the American Trudeau Society. He also was a fellow of the American College of Physicians, had served as governor for Kansas for that group, and was a regent of the organization at the time of his death.

JOHN DONAVAN CLARK, M.D.

Dr. J. D. Clark, 80, an honorary member of the Sedgwick County Society, died in a Wichita hospital on June 6. He had practiced in Wichita from 1901 until his retirement 15 years ago, specializing in obstetrics and gynecology. He was a member of the Central Association of Obstetricians and Gynecologists and was a fellow of the American College of Surgeons.

Dr. Clark, who came to Kansas immediately after his graduation from Northwestern University Medical School, was a charter member of the Sedgwick County Medical Society, originally the Wichita Academy of Medicine, which he served as president in 1908. He is thought to be the first physician in Kansas who specialized in obstetrics.

Antabuse as an Adjunct in the Treatment of Chronic Alcoholism

Samuel Rapport, M.D.

Kansas City, Kansas

INTRODUCTION

Since the end of World War II a scientific and intelligent approach to chronic alcoholism has grown out of an increasing awareness of this important individual as well as public health problem. The cost to society of sudden deaths by violence or suicide, physical deterioration, and moral disintegration produced by alcohol is appalling. Few individuals escape being touched by alcoholism either by personal experience or by contact with alcoholic relatives or close friends.

At the present development of our knowledge concerning chronic alcoholism there is no general agreement as to etiology, dynamics, and therapy. This should not be construed as therapeutic nihilism, since promising results have been obtained with many different treatment techniques. Vogel¹ feels that no matter what kind of therapy is used—whether it be organic or psychological, whether it be aversion therapy, nutritional, hormone, psychotherapy, Alcoholics Anonymous, antabuse or any combination of the above—results depend on the degree of motivation and that an initially well motivated patient is likely to do well in any therapy.

The purpose of this paper is to discuss the use of tetraethylthiuram disulfide (antabuse) as one of the effective therapeutic tools in treatment of chronic alcoholism.

HISTORY

Two Danish physicians, Jacobsen and Hald, were investigating the possibility of using tetraethylthiuram disulfide (TETD) as an anthelmintic in 1947. The two men had been taking the drug to look for toxic effects, and they became ill after cocktails had been served at an evening party. After this unexpected initial experience, they found that this ability of tetraethylthiuram disulfide to "sensitize" a person to the ingestion of alcohol was reproducible. They suggested it be given a trial in alcoholism. The first English language report of their work appeared in the *Lancet* in 1948.²

Martensen-Larsen,³ their co-worker, conducted a series of clinical experiments that demonstrated the

intense discomfort experienced by persons on antabuse following consumption of alcohol. They concluded that the drug might be useful in treating alcoholism in that not only was psychologic aversion induced but also physiologic intolerance. Such intolerance to alcohol remained manifest so long as the patient continued to ingest small doses of the drug.

PHARMACOLOGY

A. Mode of Action

Antabuse interferes with the metabolic degradation of alcohol in the body by an inhibition of acetaldehyde metabolism which arises from the oxidation of alcohol.⁴ In vitro experiments indicate that the predominant action of antabuse is on liver xanthine oxidase, an enzyme known to metabolize acetaldehyde.^{5, 6} Thus, the acetaldehyde concentration in the blood of patients receiving antabuse is found to be seven to ten times the usual level following ingestion of alcohol.² Correlation of the acetaldehyde accumulation with the symptoms following ingestion of alcohol in antabuse-treated patients has been confirmed by observing the effect of intravenous administration of acetaldehyde on untreated subjects. Antabuse does not affect the rate of alcohol elimination from the body.⁷

One explanation of the action of acetaldehyde is that the increased blood level of acetaldehyde acts as a sympathomimetic drug. Antabuse was found to prolong the vasodilating phase of the response of specific sympathomimetic receptor cells to acetaldehyde.⁸ Antabuse is slowly absorbed by and slowly excreted from the gastrointestinal tract. It must be taken at least 12-24 hours prior to a test dose of alcohol to produce the desired unpleasant effect. Approximately 20 per cent is excreted in the feces during the first two or three days following its administration.^{2, 9} Symptoms have followed the ingestion of alcohol seven to eight days, with reports of reactions as much as 20 days after discontinuance of the drug.¹⁰ It has not been found in the urine. The liver appears to play some role in detoxification.¹¹

DOSAGE

The drug is distributed in 0.5 gm. tablets and is given orally. Various dosage schedules have been recommended. The usual dosage schedule is one tablet daily for a period of two weeks, following which

This is one of 11 theses, written by fourth year students at the University of Kansas School of Medicine, selected for publication by the Editorial Board from a group judged to be the best by the faculty at the school. This paper received honorable mention in the 1954 Phi Chi award contest. Dr. Rapport has just completed internship at the University of Kansas Medical Center.

time an antabuse-alcohol drinking trial may be instituted. Treatment should not be instituted in the presence of alcoholic intoxication. The patient should be instructed that antabuse will not be started until he has been free of alcohol for at least four days.^{4, 12}

Recently Martensen-Larsen¹³ altered this schedule on the basis of his experience in treating more than 2,000 patients over a five-year period. He recommends 15 mg. per kg. of body weight given on the first consultation visit to non-intoxicated patients. In the event that the patient is intoxicated, Martensen-Larsen recommends antabuse, nevertheless, in a reduced dosage (i.e. 7.5 mg. per kg.) and always in combination with an antihistaminic drug and 5 gm. of sodium chloride. This combination prevents nausea and vomiting while providing sufficient sedation. Furthermore, symptoms of hangover and craving for alcohol are reduced rapidly.

He has used this technique since June, 1951, in treating approximately 1,000 patients and feels there is no contraindication for the use of this method to sober up intoxicated patients. He has found the average daily maintenance dose to be 200 mg., with variation of a minimum dose of 50 mg. to a maximum of 500 mg. He feels there are no side effects so serious as to require discontinuance of treatment.

During the first few months the patient is taking antabuse he should be seen at weekly intervals. This affords an opportunity to observe him for evidence of toxicity, to adjust the dosage, and to determine how he is progressing under enforced sobriety. He should be allowed to describe spontaneously any discomfort the antabuse may be causing him. Unduly stressing possible toxic symptoms may lead to various unrelated sensations being attributed to the medication.

The maintenance dose must be individualized, depending on the patient's response to the drug and the severity of reaction occurring if he drinks. With a well-adjusted maintenance dose of antabuse and the ingestion of six cc. of absolute alcohol, a slight sensation of heat, redness, and acceleration of pulse rate should be the only symptoms seen. It has been found that sensitivity to antabuse and intolerance to alcohol, as well as the appearance of undesirable side effects, will increase until a maximum is reached within the first three months of treatment if the medication is taken continuously.¹⁴ During these months it is important not to establish any fixed maintenance dose but to follow the patient at regular intervals and make indicated adjustments of dosage.

TOXICITY

Antabuse is of low toxicity when used in the recommended dosage, and no deaths have been reported which are attributable to the drug alone. Numerous side effects have been reported. Martensen-Larsen⁶ reports that in a series of 600 patients being treated with daily maintenance doses of antabuse ranging

from 0.25-0.75 gm., the following side effects were noted:

1. Fatigue during the day, one of the first symptoms to develop.
2. Drowsiness—Patient may fall asleep during the day while sitting in a chair.
3. Morning sleepiness—Some patients complain of inability to wake up in the morning and may sleep right through the ringing of the alarm.
4. Gastrointestinal symptoms sometimes present, indigestion or mild diarrhea.
5. Headaches and dizziness noticed by some individuals, a definite indication of overdosage.
6. Reduced vitality and impaired memory. Martensen-Larsen¹³ believes impaired memory may constitute the initial symptom of a psychotic reaction due to toxicity and not to withdrawal of alcohol. This is provoked by an unnecessarily high dosage of antabuse. When these early symptoms are noted, they can be alleviated by reducing the dosage.
7. Reduced libido and diminished potency. These complaints are frequent and usually occur after several weeks of treatment. Investigation reveals that the majority of patients making these complaints have always been impotent unless drunk.¹⁵
8. Muscular sensations usually described as a sensation of heaviness in the arms or legs.
9. Allergic skin reactions which may take many forms but usually appear as small pustules on the extremities and the body. These reactions are rare and are easily controlled with antihistaminics.
10. Psychotic reactions—Many psychotic reactions have been reported during antabuse therapy.^{16, 17, 18} Bennett *et al.*¹⁹ reported six transient psychotic reactions. All patients in this series had symptoms associated with organic brain damage as impairment of recent memory, disorientation, and confusion. Some investigations seem to indicate that the action of the drug interferes with oxygen utilization of nervous tissue. Bennett suggests this property as a basis for the psychotic phenomenon. All of the above series had remissions of symptoms when the drug was discontinued.

Bowman *et al.*²⁰ reported ten psychotic reactions, six being severe depressions, two schizophrenic episodes, one paranoid reaction, and one with a transitory manic depressive state. Bowman believed these were due to withdrawal of alcohol and not toxic effect of antabuse.

Strecker and Lathbury²¹ reported two psychotic reactions in two patients whose physical and neurological examinations were completely negative before and after the psychotic episodes. They suggest the cause of the reactions was the taking away of the alcohol defense mechanism, resulting in complete personality disintegration.

Other side effects reported include anemia, a cerebral vascular accident,²² and agranulocytosis.³⁹ Chev-

ens²² reports that a small group of psychopathic persons and labile psychoneurotics gave evidence of having become addicted to antabuse. Larimer¹⁵ feels that most side effects of antabuse (with the exception of drowsiness) are controlled with brief directive psychotherapy, for he feels they are due to anxiety aroused in an alcoholic who has been deprived of his vital supporting crutch—alcohol.

TESTING WITH ALCOHOL

After a total of 4 gm., or a "sensitizing" dose, has been taken over a period of time, the patient may be given a test dose of alcohol. This testing demonstrates to the patient what will happen if he drinks while taking antabuse; it produces some aversion to alcohol; and, depending on the severity, it is an aid in determining the maintenance dose. In the past, 30-60 cc. of 80-proof whiskey was given. However, due to the unpredictable severity of the reaction in some patients, MacDonald and Ebaugh¹² suggest the following more conservative testing method.

The patient is given 15 cc. of his favorite 100-proof spirit. If no response occurs within 20 minutes, the 15 cc. dose is repeated. If a response still does not occur, another 15 cc. dose is given after 20 minutes have elapsed. If the patient does not have a satisfactory reaction after 45 cc. of whiskey, the test should be repeated in one week and it may be advisable to increase the initial dosage of antabuse. The patient should be tested in the hospital with close medical supervision.

When there are relative contraindications to the alcohol-antabuse reaction, the trial with alcohol should be eliminated. The effectiveness of antabuse as a deterrent to drinking lies in creating fear of a reaction, not in development of actual aversion to alcoholic beverages.

Although the only absolute contraindication to the use of antabuse is congestive heart failure and coronary artery disease,^{4, 13} extreme caution in its use must always be exercised. The alcohol test is usually omitted in the presence of the following conditions also: hepatic cirrhosis, goiter, epilepsy, pregnancy, and chronic or acute nephritis. If the risk of therapy with antabuse is outweighed by the seriousness of chronic alcoholism in a particular patient, he should be placed on a dosage schedule adjusted to the smallest amount which will cause a slight flushing, slight increase in pulse rate, and a mild dyspnea of 15 to 20 minutes duration, following the ingestion of a single 6 cc. dose of absolute alcohol.¹³

The patient should be advised of the danger of alcohol consumption while on antabuse and cautioned as to the alcoholic content in cough mixtures and proprietary sedatives. These patients must never be given paraldehyde. An alcohol-antabuse reaction following the local use of an after-shave lotion contain-

ing 50 per cent alcohol has been reported.²³ It is also wise for the patient to carry an identification card stating he is on antabuse therapy and if found ill or drunk should be taken to the hospital.

Since no similar series of patients tested with alcohol as compared to those not tested has been reported, the therapeutic benefit of testing is difficult to evaluate. Many investigators^{8, 10, 24} feel that testing is not an important factor in determining whether or not treatment with antabuse will be successful. Inasmuch as individual severity of reaction cannot be predicted, testing with alcohol may be extremely hazardous.

ALCOHOL-ANTABUSE REACTION

Raby²⁵ carefully observed 39 patients during alcohol-antabuse reactions and reports the following course of events. The reaction starts very soon after the intake of alcohol by persons "sensitized" with antabuse, and its course is then typical, though with distinct individual differences.

Within a few minutes, averaging seven-eight, an observable cutaneous flush begins in the face, and the patient may complain of a feeling of fullness in his head. The conjunctivae become injected and slightly edematous. At the same time the expiratory air may begin to smell of acetaldehyde. As the reaction continues the flush spreads, typically to the upper part of the thorax but in some cases universally. The skin then becomes hot but often is blotched with intervening pale areas which feel cold in relation to the surrounding red areas.

Soon after, on the average of 25 minutes, the pulse rate increases. There is a maximal rise averaging 40 beats per minute (varying from 16 to 72). In a number of cases the blood pressure rises and then falls again. The most marked alteration occurs in the diastolic pressure which may be unobtainable. It is believed that the rise of the pulse rate under the influence of acetaldehyde is due to a direct action on the myocardium, whereas the rise of blood pressure is effected by the carotid sinus and by direct influence on the peripheral vessels. The hypotensive state which frequently follows the initial rise in blood pressure has been referred to as "acetaldehyde shock."

In some cases there is a characteristic, loud, dry and "barking" cough. The time of its occurrence varies greatly, from 3 to 64 minutes after the intake of alcohol. Its cause may be an influence of the respiratory center or irritation of the tracheal mucous membrane.

Subjectively patients frequently complain of headache, which might be explained by dilatation of the intracranial vessels. Such headaches begin from 4 to 120 minutes after the intake of alcohol. Patients also complain of palpitations, a sensation of throbbing in the throat, and dyspnea. Gradually fatigue, weakness, dizziness, and intense sleepiness occur.

Later, from 16 minutes to an hour, nausea and vomiting often occur. In some cases the vomitus is blood streaked. Some patients complain of a desire to urinate yet are unable to void. Others complain of rumbling and gurgling in the abdomen and flatulence. A few develop violent colicky pain in the abdomen. Some patients develop hyperesthesias and paresthesias in the form of a sensation of numbness in the hands or feet.

Late in the course of the reaction, fatigue becomes predominant with feelings of sleepiness, and the reaction is generally concluded by the patient falling asleep. During sleep, small clonic twitches in the arms and legs have occasionally been observed. Convulsions have been observed in a few patients and are probably due to intense hyperventilation.^{6, 26, 27} Alcohol alone may increase or reduce ventilation whereas increased ventilation with a reduced carbon dioxide content in the expired air is regularly found in the course of an alcohol-antabuse reaction. Inhalation of oxygen brings about a reduction of ventilation but produces no subjective improvement.²⁸

Some patients may show a nystagmus, ataxic gait, and poor co-ordination during the reaction, having the appearance of being severely inebriated.

The subjective complaints, cutaneous flush, hypotension, and tachycardia may continue from 45 minutes to two hours. Occasionally, however, the symptoms may be of longer duration.

Once the patient becomes lethargic and drowsy, he will fall asleep if undisturbed. The sleep may last from 30 minutes to three hours and appears to be roughly proportional to the severity of the reaction.²⁹ After the patient awakens he usually feels better. It is necessary to keep the patient under constant surveillance from four to six hours after he has taken alcohol. In one reported case,³⁰ a 26-year-old man, without evident pathology, seemingly recovered from a reaction only to be found dead an hour later. The autopsy revealed congestive heart failure as the cause of death.

Extremely severe and dangerous reactions in antabuse-treated patients who have ingested alcohol have been reported. These reactions have consisted chiefly of cardiovascular complications involving severe hypotension, cardiac arrhythmia, electrocardiographic evidence of myocardial ischemia, and even myocardial infarction in individuals with previously normal electrocardiograms.³⁶ Most of these reactions have been caused by excessive trial doses of alcohol, too high a dosage of antabuse, or by resumption of drinking during the initial stages of treatment. Thimann³¹ reports an instance of cardiac standstill in a previously healthy 56-year-old man.

Raby³² reports that changes in the electrocardiogram are seen in most patients after the administration of antabuse and alcohol to produce a clinical

reaction. These changes are typical and transitory. They generally consist of two types: (1) flattening of the T waves only and (2) flattening of the T waves with depression of the S-T segments. He believes these changes may be associated with a change in the potassium level of the blood. Other studies reveal depression of the S-T segment in leads I and II and are thought to be similar to the depression found in digitalis intoxication and coronary insufficiency.

Several deaths have been reported following the test drink of alcohol in antabuse-treated patients.^{30, 33} Throughout the world 26 fatalities associated with the use of antabuse have been reported as of 1952. Seven of these appeared directly related to the alcohol-antabuse reaction.³⁴

The untoward reactions and deaths which have accompanied the use of antabuse should emphasize the importance of continuous medical supervision for these patients. Physicians should warn patients against drinking while on antabuse and caution relatives of the extreme danger of secret administration of the drug.

Various measures have been suggested to counteract the effects of a severe alcohol-antabuse reaction. The low blood pressure may respond to ephedrine sulfate and ascorbic acid given intravenously. Lester *et al.*³⁵ maintain that glucose-saline infusion, oxygen inhalation, and elevation to shock position are adequate measures. Brunner-Orne³⁶ reports nikethamide and oxygen are of definite value. Others^{8, 12} have found intravenous administration of any standard antihistamine will ameliorate an unduly severe reaction. The reported effectiveness of these methods in altering the reaction varies greatly.

There are a few patients who show no response to the alcoholic test even when they have been on doses as high as 1 gm. a day and 60 cc. of whiskey are taken. These patients are usually long standing alcoholics over 40 years of age.³⁷

SELECTION OF PATIENTS

A. Physical evaluation

In selecting patients to be treated with antabuse, a careful medical history together with physical and neurological examination is essential. Patients with coronary artery disease or cardiac decompensation from any cause are poor candidates for antabuse therapy. Most investigators believe the presence of these conditions is an absolute contraindication to use of antabuse. Diabetes mellitus, thyrotoxicosis, hepatic cirrhosis, and nephritis are not absolute contraindications to the use of this drug, but such patients need careful appraisal. One should also maintain a conservative attitude with elderly patients and women who are pregnant since the alcohol-antabuse reaction involves risk of injury to the fetus.

The physical evaluation should include a chest

film, a complete urinalysis, and blood count. A bromsulfalein test is advisable, and a retention of more than 15 per cent of the dye in 30 minutes is considered sufficient reason to delay the treatment until liver function is improved. In view of the electrocardiographic changes occurring during the alcohol-antabuse reaction, an electrocardiogram should be taken routinely; if the individual has evidence of coronary artery disease or myocardial infarction, this method of treatment should not be used.

B. Psychiatric evaluation

Psychiatric and psychological examination is recommended prior to institution of therapy. Treatment is more likely to prove of value with patients showing no evidence of psychotic trends. When alcoholism is a symptom of an underlying schizophrenia or other psychosis, psychoneurosis, or psychopathic disorder, the use of antabuse is contraindicated. Borderline schizophrenic adjustments, as well as character neuroses with transitional schizophrenic components that may be easily overlooked, should be watched for particularly. Lemere³⁸ points out that most authorities warn against the use of antabuse in unstable or emotionally disturbed alcoholics, on the theory that if the important defense mechanism of drinking is forbidden the patient will explode with some even more destructive behavior. Lemere finds in his experience that this type of patient does quite well on antabuse.

Its use is also contraindicated in Korsakoff's syndrome and other organic brain diseases associated with impairment of judgment and memory. These patients cannot appreciate the danger involved in this type of therapy and may continue to drink while taking the drug.

The projective, hostile person who feels threatened by help and who has difficulty in forming interpersonal relationships is usually a poor candidate. Individuals who show a capacity to develop sustained interpersonal relationships and who have some utilizable dependency traits appear to be suitable candidates.¹⁶ Those who drink because of depression should not be treated with antabuse because of the danger of suicide.¹⁵ When barbiturates are used for sedation in antabuse treated patients, addiction to the barbiturate may occur. A patient showing both habituation to alcohol and to barbiturates will usually compensate for his inability to drink by increasing his intake of barbiturates.

It is important to evaluate the patient's motivation for cure, for the commonest contraindication is lack of motivation. The patient must not be pressured into accepting antabuse therapy. If a sincere desire to stop drinking is not established, the drug offers little hope for a cure.^{5, 15}

Although factors concerning physical health which are important in the proper selection of patients are

pretty much agreed upon, much difference of opinion is found in reference to selection criteria related to psychiatric suitability. Jacobson³⁹ feels that an alcoholic is amenable to treatment only when he has a serious realization of the effects of alcohol on his life, and this realization usually comes to him when crises arise and often bring considerable pressure to bear upon the patient. Jacobson feels these patients are suitable candidates for treatment regardless of outside pressure exerted against them.

PSYCHIATRIC IMPLICATIONS

Dale and Ebaugh⁴⁰ point out that antabuse therapy has important psychological as well as biochemical reactions. As a result of the alcohol-antabuse reaction, a certain amount of conditioning is inevitable. During this time the patient experiences a situation similar to the conditioned reflex therapy of alcoholism. The prime therapeutic effect, however, is the realization of the patient that he is physiologically intolerant to alcohol.

The taking of antabuse also has some symbolic significance for the patient.³⁷ The taking of medicine regularly is definitive evidence to the patient, to the patient's family, and to his friends that the patient is ill, that he has consulted a physician about this illness, and that a remedy has been prescribed. This allows the patient to live more comfortably with himself, and to some extent his illness diminishes the rejective attitude his family and friends may have toward him. In situations of pressure, where otherwise the alcoholic might be induced to drink excessively, he refrains from doing so. Since illness is an acceptable excuse, the alcoholic when encouraged to drink can say, "No, it makes me ill," much more easily than he can offer some other reason for declining the invitation.

The psychological effects of alcohol withdrawal may take various forms, depending on the patient's underlying mental and personality disturbance. Some patients develop hypochondriacal states. Others may show increased hostility or anxiety reactions. A few patients turn to other habituations such as barbiturates. In most instances the patient himself can successfully handle changes in the life pattern resulting from withdrawal of alcohol without serious personality alterations.

THE EFFECTIVENESS OF ANTABUSE THERAPY

The true effectiveness of antabuse therapy is extremely difficult to evaluate. The criterion of cure employed by various investigators varies considerably. Everything from complete abstinence to abstinence of longer duration than occurred prior to treatment has been employed as the criterion of cure. In most series reported, other forms of therapy were com-

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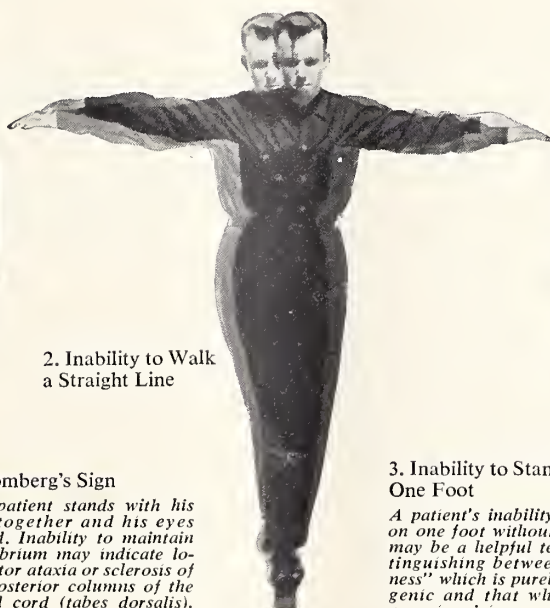
Notes on the Diagnosis and Management of "Dizziness"

II. False Dizziness



1. Romberg's Sign

The patient stands with his feet together and his eyes closed. Inability to maintain equilibrium may indicate locomotor ataxia or sclerosis of the posterior columns of the spinal cord (tabes dorsalis).



2. Inability to Walk a Straight Line



3. Inability to Stand on One Foot

A patient's inability to stand on one foot without lurching may be a helpful test in distinguishing between "dizziness" which is purely psychogenic and that which is of organic origin.

False dizziness is a sensation of sinking or lightheadedness which is often of psychogenic origin. It should be distinguished from true "dizziness" or vertigo¹ in which there is a definite whirling, moving sensation.

Unsteadiness, lightheadedness and similar manifestations of false dizziness² may be psychogenic or the result of arteriosclerosis, hypoglycemia, drug sensitivity and general metabolic disturbances such as anemia and malnutrition. Hypertension is often the cause of these symptoms.

Psychogenic dizziness probably originates at the highest brain centers. It may be described as a sense of uncertainty with occasional mild lurching but not to the point of falling. In these patients there is no nausea, no disturbance of vestibular pathways and otologic and neurologic examinations are negative. The sensation is unaffected by head movement. Symptoms usually disappear³ with complete rest.

Dramamine® has been found highly effective in many of the conditions already mentioned. Maintenance therapy with Dramamine will often keep the patient from becoming incapacitated by his condition.

Dramamine is also a standard for the management of motion sickness and is useful for relief of nausea and vomiting of fenestration procedures and radiation sickness and for relief of "true dizziness" of other disorders.

Dramamine (brand of dimenhydrinate) is supplied in tablets (50 mg.) and liquid (12.5 mg. in each 4 cc.). G. D. Searle & Co., Research in the Service of Medicine.

1. Swartout, R., III, and Gunther, K.: "Dizziness:" Vertigo and Syncope, GP 8:35 (Nov.) 1953.
2. DeWeese, D. D.: Symposium: Medical Management of Dizziness. The Importance of Accurate Diagnosis, Tr. Am. Acad. Ophth. 58:694 (Sept.-Oct.) 1954.
3. Kunkle, E. C.: Central Causes of Vertigo, J. South Carolina M. A. 50:161 (June) 1954.

SEARLE

bined with administration of antabuse. Selection of patients has varied from indiscriminate administration of the drug to all who requested it to a careful medical and psychiatric screening, with selection for treatment of only those individuals felt to be most amenable to treatment. Duration of follow-up on most series reported is much too short when measured in terms of a chronic relapsing disease like alcoholism. Under these circumstances a statistical analysis of the effectiveness of antabuse would be misleading.

Hoff and McKeown⁴¹ report the following results in a comparative study of patients followed from 3 to 30 months.

ANTABUSE TREATED PATIENTS vs. NON-ANTABUSE TREATED PATIENTS

	Patients treated with antabuse Total 560	Patients treated without antabuse Total 232
Abstinent since beginning of treatment	37%	24%
Single relapse	20%	9%
No improvement	13%	18%

Brunner-Orne³⁶ reports good results in 32 per cent of her antabuse-treated patients as compared to 25 per cent in patients not receiving antabuse. Mann *et al.*¹⁸ report that in their series of 32 patients, 31 per cent remained sober for periods up to eight months. O'Donnell *et al.*⁴² reports 20 of 26 patients treated, or 76 per cent, remained sober over a 12-months period. In Smith, Brown and Dardin's report⁴³ of 24 patients treated, 15 abstained for 3-12 months. Usdin¹⁴ reports abstinence in 16 of 24 patients treated, or 66 per cent. Jacobsen and Martensen-Larsen,²⁷ in a six-months report of their patients in Denmark, report that of 99 patients, 52 were socially recovered, 19 were much better, 12 somewhat better, and 16 unchanged. In Dale and Ebaugh's³⁷ report of 29 cases, 9 recovered on a six-months follow up.

All of the above investigators employed some form of psychotherapy in conjunction with administration of antabuse. Psychotherapy ranged from formalized individual therapy to group therapy, including Alcoholics Anonymous. The use of some form of psychotherapy when antabuse is employed is universally recommended. Shideman⁵ reports 80 per cent failures when antabuse is used alone.

It is impossible to reach valid specific conclusions on the efficacy of antabuse on the basis of studies reported in the literature. These studies are incomparable in so many important variables that comparison would be ludicrous. Such complex variables as the type of psychotherapy accompanying antabuse and the selection of patients further obscure the true role of antabuse in rehabilitation of chronic alcoholics.

The two studies reported above, i.e. Hoff-McKeown⁴¹ and Brunner-Orne,³⁶ in which antabuse-treated patients were compared with patients treated without antabuse, indicate an increased cure rate of 13 per cent and 7 per cent respectively in antabuse-treated patients. Most investigators feel that antabuse is of definite value when properly employed, if only to maintain sobriety long enough for psychotherapy to be effective in improving the personality defects which underlie chronic alcoholism.

SUMMARY

Tetraethylthiuram disulfide (antabuse) has been employed since December, 1947, in the treatment of chronic alcoholism. The drug is relatively non-toxic when taken over long periods of time provided alcohol is not ingested. The side effects which do arise are mild and infrequent and can usually be eliminated by adjustments of the maintenance dosage. Antabuse plus alcohol produces a disagreeable reaction consisting of flushing, headache, palpitations, dyspnea, hyperventilation, tachycardia, hypotension, nausea, and vomiting. The intensity and duration of symptoms depend on the dosage of antabuse, amount of alcohol ingested, and the individual's sensitivity to the acetaldehydemia produced.

Careful physical and psychological evaluation of the patient must be carried out before treatment is instituted with this drug. Suitable candidates are then given a "sensitizing" dose of antabuse. Most patients are then given an alcohol test in order to vividly acquaint them with their newly-acquired physiological intolerance to alcohol. Reaction to this testing may be unduly severe and hazardous and may even result in death. The therapeutic necessity of this procedure has not been established, and in instances where alcohol testing was not employed the end results of antabuse treatment were not altered. In patients with coronary artery disease or cardiac decompensation, alcohol testing is contraindicated.

Antabuse cannot be used alone effectively but must be combined with psychotherapeutic measures designed to alleviate personality alterations responsible for chronic alcoholism. The drug should not be employed without the full knowledge and consent of the patient. Patients who are unwilling or unable to cooperate should not be placed on the drug. If the patient is not strongly motivated to stop drinking, and many chronic alcoholics are not, the drug alone provides little chance for a cure. Antabuse imposes an "enforced sobriety" on the patient and may thereby render him accessible for a psychotherapeutic approach to his basic emotional problem.

The advantages of antabuse may be listed as follows:

1. It can be given by the family physician on an outpatient basis.



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INDICATIONS:

Because of its high degree of sedative effectiveness, Mebaral finds a great field of usefulness in the regulation of agitated, depressed or anxiety states, as well as in convulsive disturbances. Specific disorders in which the calming influence of Mebaral is indicated include neuroses, mild psychoses, nervous symptoms of the menopause, hypertension, hyperthyroidism and epilepsy.

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2. If it is taken regularly it serves the purpose of hospitalization in that it effectively prevents the alcoholic from drinking.

3. It is superior to hospitalization in that the patient must learn to adjust in his usual environment and can continue to work and thereby eliminate the financial burden of long-term hospitalization required by other methods of treatment.

4. It helps symbolize to the patient and his family that he is ill and is being treated.

5. It deters the impulsive drinker who might otherwise go on numerous "binges."

The important disadvantage of antabuse therapy is the severity of the reaction following alcoholic ingestion. Also the drug cannot be given to individuals with serious renal, cardiovascular, or hepatic disease. These illnesses, of course, will include many chronic alcoholics for whom antabuse therapy would be extremely hazardous.

In studies comparing the results of antabuse-treated patients with patients treated for chronic alcoholism with other techniques, an increased cure rate of 7-13 per cent was found among the antabuse group. All antabuse-treated patients, however, also received some form of psychotherapy. When antabuse has been used alone, 80 per cent failures have occurred.

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ACTIVITIES OF MEMBERS

Dr. Thomas P. Butcher, Emporia, addressed a recent meeting of the Topeka Rotary Club on the subject of "The Larger Perspective."

Dr. E. M. Burrell, who recently announced the closing of his office in Turon, has begun practice in Wichita.

Dr. Ralph H. Major, of the University of Kansas School of Medicine, gave the 12th annual D. J. Davis lecture on medical history at the University of Illinois College of Medicine in May. He spoke on Etruria and Etruscan medicine.

One of the speakers at a recent meeting of the American Geriatric Society in New York was Dr. Anthony F. Rossitto, Wichita, who discussed "Roentgen Therapy of Chest Symptoms in the Elderly."

Dr. W. Clarke Wescoe, dean of the University of Kansas School of Medicine, received an alumni achievement award at ceremonies held last month at Muhlenberg College, Allentown, Pennsylvania.

Dr. Murray C. Eddy addressed the Rotary Club in his home city of Hays recently. He discussed Kansas legislation dealing with medicine, especially that considered during the 1955 session of the legislature.

Dr. J. P. Berger, Wichita, was speaker at the May meeting of the Central Kansas Medical Society at Hays. His subject was "What's New in Dermatology."

Dr. Albert N. Lemoine, Jr., of the University of Kansas School of Medicine, discussed surgical anatomy of the anterior chamber angle before a recent meeting of the Oklahoma EENT Society at Oklahoma City.

Dr. Walter A. Carr, Junction City, went to Chicago recently to receive recognition from Northwestern University on the 50th anniversary of his graduation from the university's medical school.

Dr. George Malouf, who practiced at Leoti for several months, has opened an office in Greensburg. Dr. Malouf served in the Air Force in World War II and in the Korean War and practiced in Texas before moving to Kansas.

Dr. Frank F. Allbritten, Jr., chairman of the department of surgery at the University of Kansas Medical Center, has been appointed a member of the Editorial Board of the *Annals of Surgery*.

Dr. N. C. McCubbin recently closed his office in Concordia and moved to Alton, Illinois, where he is now in practice.

Dr. Russell A. Nelson recently completed a term of military service and is now practicing in Wichita.

Dr. Willard J. Kiser, Wichita, was principal speaker at the May meeting of the Wichita Manufacturers Club. He spoke on problems of industrial medicine.

Dr. La Verne B. Spake, clinical professor of ENT and chairman of the hearing and speech department at the University of Kansas Medical Center, became clinical professor emeritus July 1. Dr. G. O'Neil Proud has accepted appointment as chairman of the hearing and speech department.

Dr. Maurice F. Stock, formerly of Weir, is now living and practicing in Pittsburg and is continuing to maintain his office in Weir.

Dr. Antoni M. Diehl, pediatric cardiologist at the University of Kansas Medical Center, spoke on "Let's Stop Rheumatic Fever" before the Kansas City Kiwanis Club at a meeting last month.

Dr. James E. Hodgson completed 51 years of practice in Downs on May 30. In addition to other practice, Dr. Hodgson has delivered 3,000 babies during that period.

Dr. Ralph E. Jordan, formerly of Horton, has moved to Emporia and is now practicing there.

Dr. Alfred O. Mazat, Wichita physician since 1947, has been called by the Mission Board of Seventh Day Adventists to serve as a medical missionary in Singapore. Dr. and Mrs. Mazat and family left New York on June 13 to fly to London. They will sail for Singapore late this month, stopping in Egypt and India.

Dr. Willard J. Howland, Tonganoxie, recently went to the Mayo Clinic in Rochester for specialist training. His office in Tonganoxie has been taken over by Dr. Phil Stevens, a 1954 graduate of the University of Kansas School of Medicine.



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Dr. Harry F. O'Donnell, Junction City, told the story of the development of the Salk vaccine to the Junction City Rotary Club last month.

A feature story about Dr. John D. Pace, Parsons, was published in the *Coffeyville Daily Journal* last month. Dr. Pace, who stepped out of office as county coroner in January, had served in that capacity for 30 years.

Dr. Clarence K. Vaughn, who recently completed 57 years in the practice of medicine in Leavenworth, announced his retirement last month.

Dr. William T. Sirridge and Dr. Marjorie S. Sirridge, a husband and wife medical team, announce the opening of their office in Kansas City. They will specialize in internal medicine. Both were graduates of the University of Kansas School of Medicine in 1944 and had internships and residencies in Cleveland. Dr. William Sirridge, who has been in military service since 1953, is being discharged this month.

Dr. William A. Nixon, who has been practicing in Macksville for seven years, has announced plans to study cardiovascular diseases at the University of Pennsylvania School of Medicine.

Dr. Dennis A. Hardman, who has been serving in the Navy for two years, was separated from the service last month and will resume his practice in Smith Center.

Dr. Daniel S. Roccaforte, formerly of Hanover, is now in San Diego where he is resident chest surgeon at Mercy Hospital. His office in Hanover is being taken over by Dr. Gerald L. Mowry, formerly of Platte City, Missouri. Dr. Mowry is a graduate of the University of Kansas School of Medicine.

Dr. Donald R. Davis recently completed a three-year fellowship in general surgery at the Mayo Clinic, Rochester, and has returned to practice in Johnson County with offices in Mission.

Dr. J. Robert Twinem, Olathe, addressed the Pollyanna Home Demonstration Unit there recently on the medical aspects of civil defense. Members of the audience had recently completed a Red Cross home nursing course.

Dr. Robert C. Hull, who has been practicing in Haven, began a residency at the Menninger Clinic, Topeka, on June 1. His practice at the Haven Clinic

is now being cared for by Dr. Clayton Diener, a graduate of the University of Kansas School of Medicine who served his preceptorship in Haven.

Dr. Richard L. Merkel, Topeka, became a diplomate of the American Board of Obstetrics and Gynecology recently.

Dr. Elbert Lee McCorkle, who has been practicing as a member of the staff of the Horton Hospital and Clinic since 1947, moved to Marshall, Missouri, last month and is now engaged in private practice there.

Dr. Edmer Beebe and Dr. J. Robert Twinem held open house at their new offices in Olathe on June 26. Dr. Twinem was recently accepted as a member of the American Academy of General Practice and its Kansas chapter.

Dr. Philip H. Hostetter, who has been practicing at the Ball Clinic, Manhattan, has announced the opening of a private office in Manhattan.

Dr. Farris D. Evans, Wichita, was named department surgeon for the Veterans of Foreign Wars at the organization's state convention held in Wichita early in June. Dr. Evans is also surgeon for the Wichita post.

Dr. George M. Edmonds, Horton, has announced that the Horton Hospital and Clinic have added two members to their staffs, Dr. James Scanlon and Dr. Val Converse. Dr. Scanlon recently completed internship at St. Margaret's Hospital, Kansas City, and Dr. Converse has been interning at a hospital in St. Joseph, Missouri.

Dr. Paul Guggenheim, formerly on the staff at Winter VA Hospital, Topeka, has opened an office in Topeka for private practice in otolaryngology and ophthalmology.

Dr. Henry Laurens, Jr., Salina, recently attended meetings of the American Gastroscopic Society and the American Gastroenterological Association in Atlantic City.

Dr. Richard J. Reece, who has been a resident in public health in Kansas City during the past year, has gone to Denver to begin his duties as director of local health services for the state of Colorado.

Dr. Philip Antrim, formerly of Toole, Utah, has opened an office for practice in Russell. He will also

practice in Luray three days a week. Dr. Antrim is a graduate of the University of Kansas School of Medicine.

Dr. Doris North, Wichita, was guest speaker at a meeting of the Sedgwick County Medical Assistants' Society last month. She discussed socialized medicine.

Dr. Grace H. Ketterman has resigned as assistant director of the Kansas City-Wyandotte County health department to begin a two-year residency in pediatrics at General Hospital, Kansas City, Missouri. She will be succeeded in the public health work by Dr. Nellie G. Walker, Kansas City.

Dr. H. St. Clair O'Donnell, Ellsworth, was elected president of the Kansas State Board of Health at a meeting held in Topeka on June 17.

One fact which must be acknowledged and is of practical importance is that over the country the annual number of newly reported cases of tuberculosis has declined very little. In fact, the number increased from 1940 until 1948 and, while it has gone down for the past four years, in 1952 it was

still slightly higher than in 1940, although the case rate has gone down since it is affected also by the increasing population. Even though many of these do not require hospitalization, all should be investigated, their clinical status determined, their familial contacts studied, and other appropriate control measures taken where indicated. Thus, there has been no decrease in the effort required of health departments and voluntary agencies, and no reduction in personnel or funds should be contemplated. In fact, greater effort is demanded if tuberculosis is to be eradicated, and no lesser goal should satisfy us.—*Philip E. Sartwell, M.D., Nat. Tuberc. A. Tr., May, 1954.*

A new medical insignia design has been developed and approved for use by Air Force Medical Service physicians and dentists. It is a small silver badge with a caduceus on a staff mounted in its center. The dental badge carries a "D" superimposed on the caduceus. Flight surgeons will continue to wear wing insignia.

Speeding on U. S. streets and highways last year killed 12,380 men, women, and children.

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THE MONTH IN WASHINGTON

Editor's Note. The following summary of Washington news was prepared by the Washington office of the A.M.A. for distribution to state and regional medical journals.

This Congress appears to have established a record for the introduction of medical legislation—but unless something unusual happens and happens fast there will be no record set for laws passed.

With the summer well along, and tentative adjournment just a few weeks off, Congress had not yet revived its interest in medical bills. Most of the measures that were offered in January and February, to the accompaniment of hopeful speeches by their sponsors, have been allowed to lie undisturbed in committee files. In some cases hearings were held, where persons and organizations vitally interested could give enthusiastic testimony. Very few bills indeed got farther than that in the first six months of the session.

One reason is the close balance in Congress, and the reluctance of either party to get behind bills offered by the other, and which might have appeal to the public in the 1956 election year. Another is worry over putting the federal government still deeper into the red in a year of prosperity, if not of boom.

Also, key committees for weeks were preoccupied with various bills on Salk vaccine, its control and its cost—weeks when the committees otherwise might have worked on, and possibly reported out, other less controversial health bills. A specific example is the Senate Labor and Welfare Committee. This committee was about ready to report out a House-passed bill for a national survey of mental health problems when it found itself deeply mired in the Salk situation. The mental health bill still is likely to be enacted, but the long delay didn't help much.

Another bill, early in the session regarded as about certain of enactment, calls for the establishment of a voluntary, contributory system of health insurance for federal civilian employees. After a year's study of the complications involved, a special task force prepared and made public the administration's program in January. The expectation was that a bill to carry out the plan would be offered in a few weeks at the most, and would be passed in a few months.

But it didn't work out that way. The administration decided that it couldn't press for these medical

benefits (U. S. would pay about one-third of insurance premiums) until the extent of a general U. S. pay raise had been fixed by Congress. So it was June before this U. S. employee health insurance bill was even sent to Congress, and then the administration was in no rush to have it passed.

Troubles also beset the Defense Department's bill to extend the doctor draft act another two years. Although the extension was strongly opposed by both the American Medical Association and the American Dental Association, the House Armed Services Committee accepted the Defense Department's arguments and voted out the bill, 24 to 0.

Ordinarily such a committee vote would have sent the bill sailing on through the House and to the Senate. But not this time. Chairman Howard Smith (D., Va.) of the House Rules Committee lectured the Armed Services Committee and the Defense Department for not making an effort to solve the doctor problem by some other means. There was consequently a delay before floor action—not fatal, but a delay.

Some bills, once considered important, were effectively ignored by Congress. One was the Eisenhower-Hobby plan for reinsurance of health insurance groups, defeated last year. The administration tenaciously defended it, but the committees weren't enough impressed to schedule hearings during the first six months of the session.

The administration bill for federal guarantee of construction loans for hospitals and clinics stirred some Capitol Hill interest, but no hearings have been held. Then came all the bills on polio vaccine, and this measure also was put on the shelf.

A bi-partisan bill for U. S. grants for constructing and equipping medical research facilities travelled about the same course: hearings, a high degree of enthusiasm from medical researchers, confidence that the plan would go through—then no more action.

For a time Senator Hill (D., Ala.), the key senator on health bills, was determined to put through his bill for federal aid for building medical schools. When hearings were held the bill did not appear to arouse opposition from any quarter, yet it was pushed farther and farther to the rear.

Because this is only the first session of the 84th Congress, none of these bills will be irretrievably lost even if not passed before adjournment. They hold whatever progress they have made, and many of them are certain to be important issues next year.

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Bumbalo, T. S., Gustina, F. J.,
and Oleksiak, R. E.:
J. Pediat. 44:386, 1954.

White, R. H. R., and
Standen, O. D.:
Brit. M. J. 2:755, 1953.

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Brown, H. W.:
J. Pediat. 45:419, 1954.

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ANNOUNCEMENTS

A workshop in medical writing will be held on the second day of the 12th annual meeting of the American Medical Writers' Association, Saturday, October 1, Hotel Jefferson, St. Louis. The course will be conducted by members of the journalism faculties of the universities of Illinois, Missouri, and Oklahoma. There will be no charge for members of A.M.W.A., but a fee of \$5.00 will be paid by others who attend. Dr. Richard M. Hewitt, Rochester, Minnesota, is co-ordinator for the workshop.

The University of Colorado Medical Center, Denver, announces seven courses to be held soon on a variety of subjects: symposium on pulmonary diseases, September 26-30; clinical electrocardiography, October 10-12; fourth western cardiology conference, October 13-15; fractures and joint injuries, October 20-22; clinical pharmacology and therapeutics, November 7-9; electrolyte and fluid balance, November 10-12; general practice review, January 16-21, 1956.

Programs may be secured from the Office of

Postgraduate Medical Education, 4200 East Ninth Avenue, Denver 20, Colorado.

The Tenth Inter-American Congress of the Pan American Medical Association will be held in Mexico City, March 25-31, 1957. Four days will be devoted to scientific sessions, and the next three days will be spent in sightseeing. During the following week medical meetings will be held in Guatemala City. Dr. Joseph J. Eller, 745 Fifth Avenue, New York, is executive director of the association.

A full-time eight-week comprehensive course in industrial medicine will be given at the Post-Graduate Medical School of New York University-Bellevue Medical Center, beginning on September 26, 1955. Tuition for the course is \$250. Applications should be sent to the dean of the school, New York 16, New York.

A scholarship for undergraduates preparing for medical careers has been established at Hamilton College, Clinton, New York, with a gift of \$18,000 by the Lillian Babbitt Hyde Foundation in New York City.

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A postgraduate course in pediatric allergy will be offered at New York Medical College from November 2, 1955, through May 31, 1956, under the direction of Dr. Bret Ratner, professor of clinical pediatrics and associate professor of immunology. A fee of \$300 will be charged. Applications are to be addressed to the Dean, New York Medical College, Fifth Avenue at 106th Street, New York 29, New York.

A five-day analysis of present trends and future directions of public health is scheduled for the 83rd annual meeting of the American Public Health Association and 40 related organizations in the Kansas City, Missouri, Municipal Auditorium, November 14-18. In all, 400 scientific papers will be presented during 75 sessions.

The American Dermatological Association, Inc., is again offering a series of prizes, \$500, \$400, \$300, and \$200, for the best essays submitted for original work relative to some fundamental aspects of dermatology or syphilology. Manuscripts are to be submitted no later than November 15, 1955, to the secretary of the association, Dr. J. Lamar Callaway, Duke Hospital, Durham, North Carolina.

The American College of Gastroenterology announces that its annual course in postgraduate gastroenterology will be given at the Shoreland, Chicago, October 27-29. Those interested in additional information and enrollment may write the College, Department P.G., 33 West 60th Street, New York 23, New York.

Applications for certification by the American Board of Obstetrics and Gynecology, Inc., for the 1956 Part I examinations, are now being accepted by the secretary, Dr. Robert L. Faulkner, 2105 Adelbert Road, Cleveland 6, Ohio. Three hundred eighty-seven candidates took the Part II examination in Chicago in May.

Although series E Savings Bonds may be cashed in at maturity, the bond owner may hold them if he wishes. They will increase in cash value each six months up to 10 more years. Series E bonds began maturing in May, 1951. Up to January 1, 1955, some \$15½ billion had matured, and around 75 per cent of that amount was being retained.

Week-end crashes accounted for 13,980 killed and 678,000 hurt during 1954.

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BOOK REVIEWS

Lectures on the Thyroid. By J. H. Means, M.D. Published by Harvard University Press, Cambridge. 113 pages. Price \$3.00.

This book consists of five lectures which deal with the fundamental and theoretical aspects of thyroid function in health and disease. It is a personal account of the author's 40 years of experience in the field of thyrology and represents in one short volume all of the pertinent information concerning present day clinical investigations into thyroid function.

As is the case when the secrets of endocrine function are probed by an inquisitive and zealous group of investigators (such as Dr. Means' group in the Thyroid Clinic of the Massachusetts General Hospital), many questions are raised and unanswered, thus providing adequate stimulus for further thought. Many questions, representing enigmas of only a few years ago, however, are clarified in this account, primarily because of up-to-date investigation by means of radioactive iodine studies.

The author attempts to correlate all the facts concerning little understood metabolism of the thyroid and other endocrine organs, their inter-relationships,

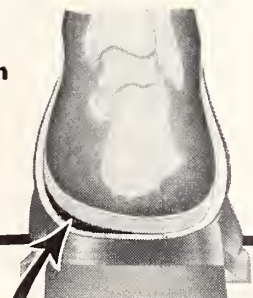
and balances. For the avid student of thyroid disease this book should be read twice because it quite subtly provokes thought into further investigations. For the busy physician, one evening's reading can bring him up-to-date on the common thyroid dysfunctions.—S.R.F.

Christopher's Minor Surgery, Seventh Edition. Edited by Alton Ochsner, M.D., and Michael E. DeBakey, M.D. Published by W. B. Saunders Company, Philadelphia. 1955. 547 pages, 251 illustrations. Price \$9.00.

Since the first edition appeared in 1929, this text has been a valued tool in the hands of several generations of physicians. The present edition, its seventh, is so radically different it is essentially a new book. It bears Christopher's name but, in keeping with the current trend, is a compilation of the work of many authors. The type and format are sharply changed. Both lead to increased ease of reading and facility of reference.

The current volume contains only about half as many pages as the last and probably less than half as many words. While some of this condensation has been achieved by deletion of obsolete material and by more concise and lucid exposition in certain areas,

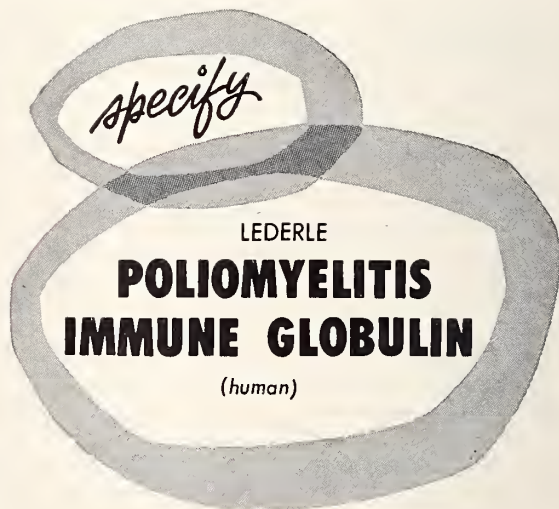
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a significant part of it has resulted from limitation of the scope of the book.

There has been a reduction in the rich store of how-to-do-it descriptions and diagrams of the little things of practice which loom so large in the experience of the intern and beginning practitioner. It was precisely the availability of this material which endeared previous editions to many of us. For example, the current volume does not contain Bunnell's excellent diagrams of where to cut and where not to cut in treating hand infections, or how to fit crutches to a patient, or how to fit a halter for head traction, or how to use Michel clips, or how to pack a nose for hemorrhage. By no means all such material has been deleted, and most of that which remains has been re-illustrated to advantage.

The sections on anesthesia, burns, and diseases of the veins and lymphatics appeal to this reviewer as especially well done. The material on injuries and infections of the extremities, now called musculoskeletal system, has been most severely curtailed.

It is to be regretted that the editors and publisher felt compelled to limit the size of the volume and thus to reduce its scope. The material which is contained is well written, well organized, and current and will be most useful to interns and general practitioners as well as to the surgical residents for whom it has been prepared.—H.A.F.

Textbook of Physiology. By John F. Fulton. Published by W. B. Saunders Company, Philadelphia. 1251 pages, 600 illustrations. Price \$13.50.

Most physicians who have been in practice for any time at all remember, with a certain degree of nostalgia, Howell's *Textbook of Physiology*. At the time of publication of the first edition in 1905, the author recognized the difficulty of incorporating into a volume of reasonable size the results of the "bewildering number of researches" pertaining to the field. It is interesting to speculate whether Dr. Howell might have had any premonition of the bewildering expansion of knowledge relating to physiology which has occurred in the last 50 years—or even in the last 15 years.

The spirit of the present edition, under the capable editorship of Dr. Fulton, is essentially that of Dr. Howell's first edition. An effort has been made to present to the members and students of the medical profession the fundamental facts and principles of physiology. The book has been kept to a reasonable size largely by selection rather than by compression of material, and the author has avoided controversy whenever possible, presenting "those conclusions which seem to be most justified by experiment and observation."

The volume is well printed and adequately bound.

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of sodium retention
and potassium depletion

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The charts, tables, and illustrations are simple and clear. Each chapter carries a list of references which, while by no means a complete bibliography of the subject, is more than adequate to the needs of the practitioner or undergraduate student.

It is safe to predict that this standard textbook will continue to enjoy its deserved popularity.—J.D.R.

Peripheral Vascular Diseases. By Edgar V. Allen, Nelson W. Barker, and Edgar A. Hines, Jr. Published by W. B. Saunders Company, Philadelphia. 792 pages, 316 illustrations. Price \$13.

Peripheral vascular diseases are becoming more of a medical problem because of the increased life span and associated degenerative changes in the peripheral vessels. This volume covers the diagnosis and treatment problems in this field. Many newer surgical aspects of treatment are covered, especially arterial grafting. A good section is presented on the ever-present and vexing management of stasis ulcers.

This is a basic textbook for the presentation of the pathogenesis, diagnosis and management of peripheral vascular disorders. Special techniques such as arteriography are ably covered.—C.A.H.

The Care of Your Skin. By Herbert Lawrence, M.D. Published by Little, Brown and Company, Boston. 95 pages, 4 illustrations. Price \$2.50.

The purpose of this little book, according to the author, is to explain the facts of acne and to tell what can be done to meet the problem. Chapter Five, "What You Can Do to Help Your Acne," is the essential chapter on skin care, and the rest of the book simply elaborates on the ideas condensed in this chapter.

This book is written for young adults and should be of practical use in helping them understand why they have acne and how they can improve their skins with common-sense care.

Public Relations in Medical Practice. By James E. Bryan. Published by the Williams and Wilkins Company, Baltimore. 301 pages. Price \$5.00.

The author, still a relatively young man, writes from a background of some 25 years' employment in the area of New York and New Jersey, as executive secretary of county and state medical societies and as administrator of a state Blue Shield plan. Actually, his association with medicine is of even longer duration because he is the son of a physician and grew up in a medical environment.

The author probes every possible facet of the physician's professional and organizational experience for

means whereby a more effective public acceptance may be obtained. He does this with disarming simplicity to make the physician's duties in the field of public relations not only appear logical and interesting, but easy. If at first the reader thinks only surface material is being presented he will, upon completing the book, be hard pressed to list any considerable number of valid topics that were omitted.

Mr. Bryan writes of the purposes of medical societies, their needs and their values, but he also discusses the advantage of a more critical selection of literature for the reception room. He writes of fees and grievance committees and of Blue Shield and health councils, but he also philosophizes ever so gently on why predominantly only Catholic doctors attend church when away from home. He explores the place of voluntary health agencies with relation to medicine but also finds space to define what he calls "political neuters and political nihilists."

The A.M.A. is evaluated, but so are the individual doctors who make up the A.M.A. There are practical ideas on a hundred topics such as appointments versus office hours, itemized bills, awards by county societies to outstanding laymen, the operation of Community Health Forums, and services in the civic interest. Some relate to the organizational, others to the personal level of experience, but all are suggested as means whereby a better public understanding of medicine can be obtained. In each instance where he explores a need, he proposes a solution and evaluates its effect.

In one sense, this is a handbook of projects but in another it becomes a philosophy of medicine. It is the composite best from doctors and from the public subtly interwoven by a man who has spent 25 years interpreting the service of the one to the other.

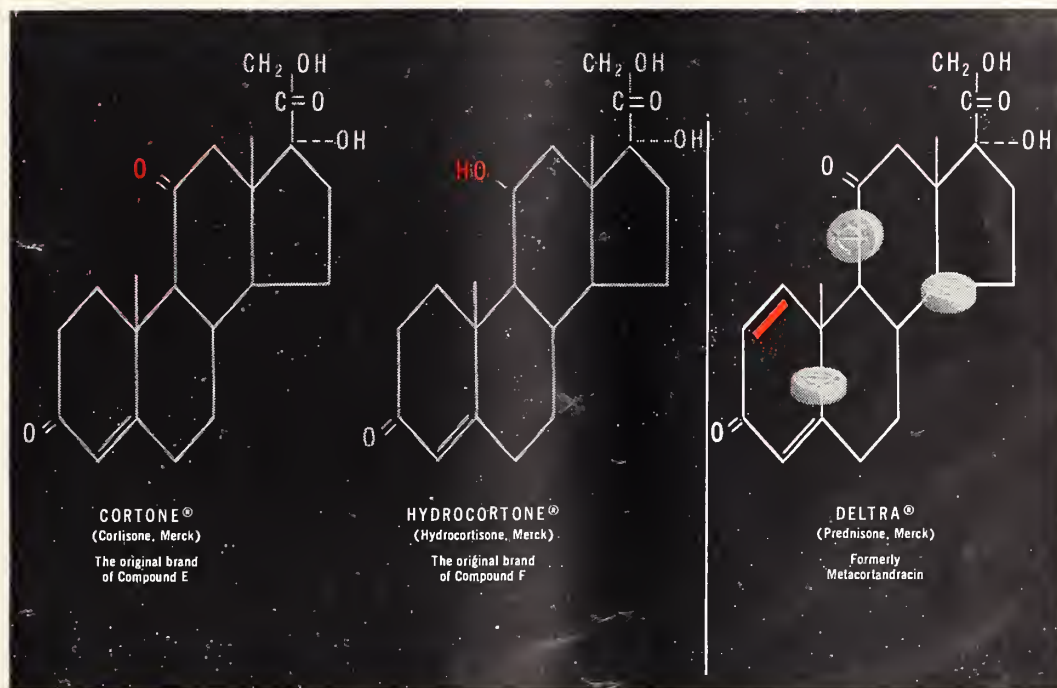
An Outline of the Treatment of Fractures. By Committee on Trauma, American College of Surgeons. Published by the College, 40 East Erie Street, Chicago. 93 pages.

This is a manual of popular pocket size compiled by the Committee on Trauma of the American College of Surgeons. The members of this committee are all distinguished surgeons who have had vast experience in the treatment of fractures. There are 91 pages with 45 explanatory figures and diagrams in this book.

As clearly indicated in the title, this book is mainly an outline of the treatment of fractures and as such some of the details are necessarily excluded. It is surprising to me that so much material could be covered so well in the few pages used. In addition to giving adequate coverage of the treatment of common fractures, other interesting data such as positioning the patient for x-ray and measurement of joint function

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are given. The 24 fractures aphorisms which are printed in footnotes and again at the end of the book should be thoroughly read and understood.

This book certainly has a place in the armamentarium of anyone who is engaged in the treatment of fractures.—L.O.L.

Medical Treatment of Mental Disease. By D. J. McCarthy and K. M. Corrin. Published by J. B. Lippincott Company, Philadelphia. 653 pages, 30 illustrations.

The authors of this book have embarked on the ambitious course of covering the treatment of a wide variety of diseases: medical, neurologic, and psychiatric, most of which may on occasions have associated psychic disturbances. They assert that toxic and organic factors underlie the majority of mental diseases and therefore require medical therapy.

The book is divided into five sections dealing with the general physical basis of psychiatry, mental disorders of inflammatory and toxic origin, endogenous and endocrine diseases, nutritional deficiencies, traumatic, vascular and degenerative processes, as well as endogenous psychoses, mental deficiencies, convulsive disorders, and autonomic disturbances. A separate section considers basic treatment methods, and there is a final section on medico-legal aspects of psychiatry.

A short chapter on the examination of the patient is inadequate, at least so far as the neurologic examination is concerned, and could have been omitted. A great deal of space is given to the description of disease with inadequate consideration of treatment which is supposed to be the justification for publishing the book. Since part of the book has been written by eight contributors, the style of writing varies.

So far as the therapy of neurologic diseases is concerned, this reviewer would take strong opposition to many ideas presented. For example 10 to 12 million units of penicillin is not an adequate amount of therapy in neurosyphilis, particularly in dementia paralytica. Although advocated, chlortetracycline (aureomycin) is of dubious value in the treatment of viral encephalitis, and one can question the statement that "phenobarbital is the sheet anchor in the treatment of convulsions." The authors do not clearly differentiate the clinical features of petit mal and psychomotor or temporal lobe epilepsy. They list the drugs used in the treatment of the parkinsonian syndrome but do not warn the reader of the dangers of toxic-delirious reactions frequently encountered from the use of those drugs.

For the general practitioner who may wish a reference book on psychiatric treatment, it will serve as a general guide for the management of a wide variety of conditions.—A.T.S.

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Program Chairmen Announced

Physicians who wish to suggest the names of speakers for future annual meetings of the Kansas Medical Society may do so by writing to the chairman of the Program Committee for each session. Chairmen now appointed are:

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ADVISORY COMMITTEE SET UP

The appointment of a Medical Advisory Committee, set up to give counsel to the Social Security Administration on medical aspects of administering the new "disability freeze" provision in the social security law, was announced recently by the Department of Health, Education, and Welfare. Dr. J. Duffy Hancock, of the University of Louisville School of Medicine, will serve as chairman.

The "disability freeze" provision is similar to the waiver of premium in commercial life insurance and permits a worker to keep his old-age and survivors insurance rights intact when he is totally disabled for work for an extended period. Determination as to whether a worker is totally disabled within the meaning of the law will be made by the vocational rehabilitation agency or other appropriate agency in the individual's own state. The committee will help in setting up guides and procedures for obtaining and interpreting medical evidence.

DRUGS IN COMMUNIST HUNGARY

The use of dangerous and often fatal drugs is reported in Communist Hungary by a former health worker who recently escaped to Western Germany, the U. S. Information Agency relates.

The escapee, who said high-ranking Communists receive "luxury hospitalization" and drugs from the

free world, told of numerous situations arising from the Soviet system of state control.

Communist inefficiency has increased to such a point that "almost entirely unreliable" and, in many instances, "dangerous" medicines are being distributed through official channels, he said. One serum distributed for inoculation of children caused numerous deaths in Budapest.

He reported that sincere doctors are "extremely apprehensive" every time they give an injection. One example of which he knew was of medicine marked "glanduitrin" which contained a substance which killed a number of persons injected with it before doctors were able to trace the reason for the disaster.

He attributed the trouble to the Communist regime's speed-up emphasis and quota work competitions and reported that Hungarian doctors fear that a prescribed medicament may do more to endanger a patient than the disease from which he suffers.

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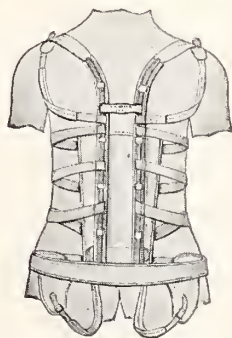
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SURVEY OF COUNTY SOCIETIES

To find out what county medical societies throughout the country are doing and to help them develop new public service programs, the A.M.A. Council on Medical Service currently is distributing questionnaires to officers of the 1,911 county and district medical societies in the United States.

The survey covers all major areas of society interest—meetings, committees, programs, activities, insurance programs, dues, office facilities, and personnel. Information gleaned from the reports will be of assistance to societies interested in expanding their activities.

FILM ON RHEUMATIC FEVER

A new health education film, *Stop Rheumatic Fever*, has been added to the A.M.A. motion picture library. The film was developed to impress upon parents, teachers, and the public the fact that rheumatic fever can be prevented by early diagnosis and treatment of streptococcal infections. It is suitable for showing to parent groups, service clubs, public health nurses, and high school students. Running time of the black and white sound film is 12 minutes.

HANDBOOK FOR THE ASTHMATIC

The American Foundation for Allergic Diseases announces publication of a booklet, *Handbook for the Asthmatic*, designed to instruct asthmatic patients in the nature of their illness and to correct misconceptions. The foundation estimates that two million persons in America have asthma.

The booklet includes discussion of cardiac asthma, types caused by bacterial or virus infections, and those produced by allergies, the most common form. Methods of desensitizing the patient are also outlined, stressing the fact that medications should be administered only under the direction of a competent doctor.

Copies of the booklet may be obtained for 25 cents in coin from the foundation, 274 Madison Avenue, New York 16, New York.

Total registration for the recent A.M.A. meeting in Atlantic City was 31,057, as compared with a total of 42,969 in San Francisco a year ago. The total physician registration at Atlantic City was 11,546.

The clinical session of the A.M.A. will be held from November 29 through December 2 in Boston.



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NEW TYPE HEALTH EXHIBITS

To acquaint people with their bodies and the size and location of various organs, the A.M.A. Bureau of Exhibits is now preparing a new series of exhibits depicting the basic anatomy of the human body. Each exhibit will feature life size three-dimensional models of particular parts of the body.

First in the group, available now, is "You and Your Body."

To be available about September 15 is "Life Begins." Actual human fetuses embedded in plastic will trace the growth of a baby from four weeks to nine months. A model of the female pelvis and diagrams will show the uniting of sperm and ovum, the division of cells, and the travel of the ovum into the uterus. The final section of the exhibit will portray in life size the actual delivery of a baby.

Others in the series, scheduled for release next year, will be on vision and hearing.

PROGRAM CHAIRMAN APPOINTED

Dr. Gerald W. Nice, Topeka, has been appointed program chairman for 1956 for the Kansas Chapter of the American College of Chest Physicians. The appointment was announced by Dr. Carl J. W. Wilen, Manhattan, president of the group.

A.A.G.P. MEMBERSHIP REQUIREMENTS

Qualifications for membership in the American Academy of General Practice were altered at the annual meeting of the group held recently in Los Angeles. It is now required that candidates for membership fulfill one of the following conditions:

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The Los Angeles meeting broke previous attendance records with 6,081 registrations.

It is clearly evident that our public health problems of the future will be concentrated among older persons, among whom chronic disease and disability are more prevalent; their social and economic overtones will have an impact on almost every family. Our plans must encompass the degenerative diseases, the long-term illnesses, and the disabling conditions of older age groups. This does not mean that we can relax our guard against communicable diseases, nor lessen our campaign to reduce infant and maternal mortality, not let up on our crusade to eradicate tuberculosis. Environmental sanitation is as important as ever and requires constant vigilance to keep the air, water, food, and milk free from pollutants including those spawned by atomic fission.—*Herman E. Hilleboe, M.D., N.Y.S. J. of Med., Dec., 1954.*

The Woman's Auxiliary to the Marshall County Medical Society received a prize of \$15, third place in its size of membership group, in the 1955 contest conducted by the Woman's Auxiliary to the Amer-

ican Medical Association for the sale of subscriptions to *Today's Health*.

Steady elimination of chronic infectious illness has not only saved lives outright but also has helped extend the average age of the population, so physicians deal much more frequently than formerly with the ailments of old people, and society must construct appropriate institutions for their care.—*Esmond R. Long, M.D., Bulletin of History of Medicine, July-August, 1954.*

The routine chest survey yields a certain amount of asymptomatic pathology. The yield depends on multiple factors, of which age, sex, occupation, and family history are perhaps the most significant. We expect that 5 per cent of all routine chest films taken on the so-called healthy population will yield some degree of intrathoracic abnormality and that at least 10 per cent of routine chest films taken on hospital admissions will show significant pathology. The routine chest film should be as much a part of a good physical examination as is a blood count or a urine analysis.—*Ida Levine, M.D., and Henry Greenfield, M.D., N.Y.S. J. of Med., December, 1954.*

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References (1) Jones, C. P.; Carter, B.; Thomas, W. L., & Creadick, R. N.: *Obst. & Gynec.* 5:365, 1955. (2) Balch, H. H.: *Mil. Surgeon* 115:419, 1954. (3) Altemeier, W. A.; Culbertson, W. R.; Sherman, R.; Cole, W., & Elstun, W.: *J.A.M.A.* 157:305, 1955. (4) Kutscher, A. H.; Sequin, L.; Lewis, S.; Firo, J. D.; Zegarelli, E. V.; Rankow, R., & Segall, R.: *Antibiotics & Chemotherapy* 4:1023, 1954. (5) Clapper, W. E.; Wood, D. C., & Burdette, R. I.: *Antibiotics & Chemotherapy* 4:978, 1954. (6) Sanford, J. P.; Favour, C. B.; Harrison, J. H., & Mao, F. H.: *New England J. Med.* 251:810, 1954. (7) Sanford, J. P.; Favour, C. B., & Mao, F. H.: *J. Lab. & Clin. Med.* 45:540, 1955. (8) Felshin, G.: *J. Am. M. Women's A.* 10:51, 1955.



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Volume LVI

AUGUST, 1955

No. 8

The Surgical Treatment of Gastritis

John G. Shellito, M.D., and B. E. Stofer, M.D.

Wichita, Kansas

One of the most controversial subjects today is that of chronic gastritis and its relationship to carcinoma. Konjetzny^{15, 16} was one of the first to associate carcinoma of the stomach with chronic hypertrophic gastritis. Hurst¹² in 1929 reviewed carcinoma of the stomach and gastritis and stated that in 75 per cent of the cases the carcinoma was secondary to some sort of gastritis. He considered polyposis, if it preceded cancer, secondary also to gastritis. Hurst¹³ thought that the remainder of carcinomatous lesions of the stomach follow in 20 per cent gastric ulcer and in 4½ per cent a simple adenoma.

In 1932, Davis⁵ wrote that one of the causes of primary carcinoma of the stomach had probably been discovered in chronic gastritis. He also stated that chronic gastric ulcer offered a basis for an indeterminate proportion of gastric cancers. In 1936, Eusterman⁶ warned that carcinoma need not necessarily follow chronic gastritis in every instance. C. P. Baker² demonstrated two types of stomach mucosa and showed that there was an increase in stomach cellularity and lymphocytic infiltration together with an increase in globulin and mucous cells in the antral portion of the stomach. He has judged 3,200 cases of carcinoma of the stomach and found that in a large proportion there was a generalized hyperplasia of the mucous cells, indicating that the exciting factor must produce changes in the entire mucosa. He concluded that these changes were probably precancerous. Baker² has also stated that hyperplasia of the mucous cells is observed in pernicious anemia, and that this probably represented an early manifestation of the process

which leads to the development of polyps and eventually carcinoma.

In 1943, W. C. Alvarez¹ reported a case in which it seemed likely that cancer was the end result of chronic gastritis. In the same year, W. C. McCarty¹⁹ stated that carcinoma, following chronic gastritis, was a definite possibility pathologically, but that he had never seen a single carcinoma which he believed had its origin in a gastritis, that was not associated with chronic ulcer or polyp. He could see no etiologic or histologic relationship between the two conditions when a chronic ulcer was not present.

G. M. Smith²⁶ in 1944 reviewed the status of chronic gastritis, having stated that cancer of the stomach starts in the mucous producing cells of the stomach and goes from this focal point in all directions. He stated that Warren³⁰ and Collins⁴ were able to trace the change in gastric epithelium from minor erosions to what was considered precancerous change present in chronic gastritis. In 1943, Guiss and Stewart⁹ stated that gastric atrophy appeared to be the result of an aging organ and is not necessarily related to cancer.

In June of 1946, Maimon and Palmer¹⁸ thought that superficial and hypertrophic gastritis might be variations of the same process rather than a distinct entity. They found atrophic changes were frequently in the upper third of the stomach and superficial and hypertrophic changes more often in the middle. Their conclusion was that regardless of the attractive theoretical considerations, the clinical significance of chronic gastritis remains unproved. In 1944, S. Warren and W. A. Meissner³⁰ quoted Konjetzny, Schindler, Hurst, and Judd, stating that chronic gastritis may be a precancerous lesion; however, they divided

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chronic gastritis into two types, the exudative type as a non-precancerous lesion, and felt that the epithelial type was a premalignant lesion. They stated that not all types of chronic gastritis need be considered precancerous lesions.

Harris¹⁰ stated that hypertrophic gastritis may occur in a form indistinguishable from carcinoma (1945). In June of 1945, H. M. Pollard and R. R. Cooper²² stated that hemorrhage can occur from hypertrophic gastritis and that the symptoms may be indistinguishable from those of gastric carcinoma or peptic ulcer.

The most familiar forms of gastritis could well be divided into two portions: (1) hypertrophic gastritis associated with lesions of the stomach and duodenum, and (2) atrophic gastritis associated with pernicious anemia and chronic alcoholism. There is much evidence that these two forms of gastritis may be part and parcel of the same process. It is thought by the authors that hypertrophic gastritis may well be the preliminary stage of atrophic gastritis. An obstruction of the stomach due to mechanical factors will favor the development of gastritis. The presence of gastritis does not necessarily mean that the patient will have symptoms.

Hirsh¹¹ was unable to find any evidence of acute or chronic inflammation in a series of stomachs taken from drunkards who died of delirium tremens.

Church, Walters, and Wellbrock,³ in a study of stomachs resected for carcinoma, revealed that pyloric obstruction is undoubtedly a factor. In sections taken proximal to the lesion they found chronic gastritis in 92 per cent of the cases.

Fitzgerald⁸ stated that it has long been the custom to associate chronic ulcer of the stomach and duodenum with persisting indigestion accompanied by periodic pain, hemorrhage, retention, etc. It is now definitely established that these signs and symptoms may occur in the absence of ulcer. Fitzgerald⁸ felt that chronic gastritis was the responsible disease. He presented nine cases of "chronic follicular gastritis," which could well represent the intermediate stage between hypertrophic and atrophic gastritis, and men-

tioned that in one specimen it was possible to find atrophy, excessive regeneration, superficial ulceration of the mucosa, polypoid overgrowth, and hemorrhagic erosion. All of these pathologic pictures are part of one continuous degenerative and reparative process in the stomach wall. Lymphoid infiltration was a common occurrence, and, because of this finding, gastritis described by Fitzgerald was called chronic follicular gastritis. The case presented here falls into this stage of the pathologic process almost exactly (See Figures 1 and 2).

Fitzgerald⁸ suggested that until the etiology of gastritis is completely known, a partial gastrectomy either of the Billroth I or modified Billroth II type should be the treatment of choice.

CASE REPORT

This 26-year-old white male presented himself complaining of stomach difficulties of one year's duration. He described this difficulty as cramps in the upper abdomen, nausea without vomiting, and a salty taste in the mouth. Indigestion, which occurred with meals or between meals, had no specific response to soda. The patient had been placed on anti-acid therapy elsewhere to no effect. The man did not drink but was a heavy smoker. The remainder of his history was essentially negative.

Gastric analysis revealed a free hydrochloric acid of 45 units with a total acidity of 52 units. There was no anemia.

The radiologist reported an indefinite lesion in the distal third of the stomach which was thought to be a neoplasm. Gastroscopy was done, and hypertrophic gastritis was seen.

Exploration was advised and carried out. The pyloric portion of the stomach was found to be indurated and almost nodular. Mesenteric nodes did not seem to be involved by tumor metastases. Upon close inspection, the distal one-third of the stomach mucosa seemed to be hyperemic, thick, and nodular. It was difficult to determine whether or not one was

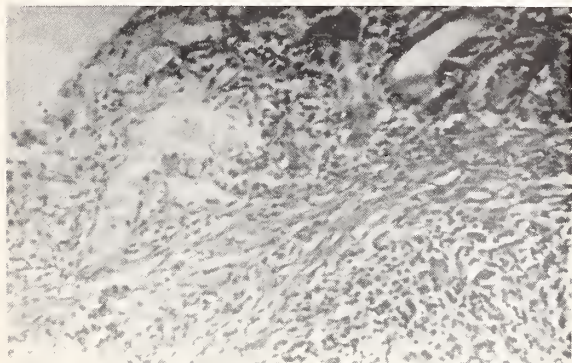


Figure 1. Chronic follicular gastritis—lymphoid infiltration.

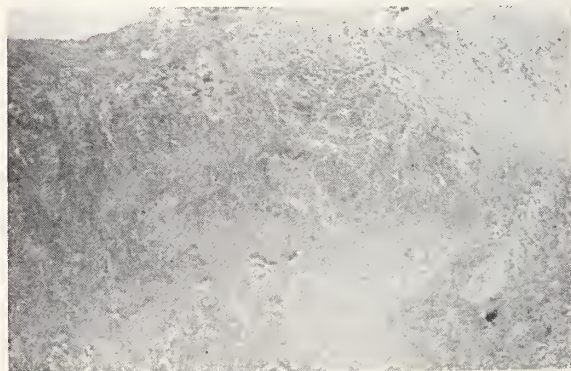


Figure 2. Chronic follicular gastritis—polypoid growth and erosion.

dealing with a carcinoma. Frozen section examinations of the nodes and mucosa were reported as negative. A Schoemaker modification of a Billroth I procedure was done, resecting the distal one-third of the stomach. The patient made an uneventful recovery and is well one year later.

CONCLUSION

From our own experience it would seem that chronic hypertrophic gastritis, when seen through the gastroscope, is a lesion to be watched closely and to be considered as a clinical precancerous lesion until proved otherwise.

It is felt that chronic hypertrophic gastritis is one stage of a continuous cytologic process. This process might well be considered as progressive from a simple inflammatory or exudative gastritis through hypertrophic gastritis or hyperplasia, followed by atrophic gastritis and finally malignancy.

If an ulcer should appear, or a space-filling defect, either by x-ray or gastroscopic means, the patient should be explored as the only sure way to determine the malignancy or non-malignancy of a lesion in the stomach.

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Heat Stroke: Experience at the Winfield State Training School during a Record Heat Wave

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Kansas City, Kansas

The Midwest will long remember July, 1954, because in that month it suffered one of the most disastrous heat waves in its history. For 14 consecutive days, the mercury rose to 106 degrees or higher. Uncomfortable though they were, most people survived this period with no serious effects.

Not all Kansans were so fortunate. In this state alone, Associated Press reports attributed 41 deaths to the heat. Hardest hit were the state mental institutions, where 18 patients died. At the Winfield State Training School, Winfield, Kansas, a high incidence of heat stroke created an emergency that for two days threatened the lives of more than 1,400 mental defectives. Although there were only three deaths, strenuous measures were required to prevent a major catastrophe.

At that time, the Department of Medicine of the University of Kansas School of Medicine was offering a four-months' tour of duty at Winfield as part of its residency training program. In that capacity, I suddenly had to direct on a mass scale the medical management of a disease with which I had had little previous contact. It is quite likely that other physicians, particularly those working in mental and geriatric institutions, may at some time find themselves in a similar situation. For this reason the following account of a rather unique experience with heat stroke is submitted.

PHYSIOLOGY OF HEAT REGULATION

By way of introduction, perhaps a brief review of the physiology of heat regulation would be in order. It is obvious that if body temperature is to remain constant, a balance must exist between the rate of heat production and the rate of heat dissipation. The chief avenues of heat loss are radiation, convection, conduction, and evaporation. Under ordinary conditions, the first three account for about 70 per cent, while 27 per cent is lost by evaporation of moisture from the skin and lungs. The remaining three per cent is lost in warming the inspired air and in the urine and feces.¹ However, when the external temperature reaches 95 degrees or more, evaporation be-

comes practically the only means of heat dissipation.² The efficiency of evaporative cooling depends to a large extent on the ability of the individual to secrete sweat normally.

This problem was carefully studied by Dill³ on workers during the construction of Boulder Dam. He found that adaptation to hot climates involves not only an increase in the capacity to sweat and production of sweat of lower salt content, but also greater sensitivity in the control of perspiration.

Dill also found that it is not enough to have adequate water and salt supplied in the diet and a copious secretion of sweat. Of equal importance are the circulatory adjustments necessary for transfer of heat from areas where it is produced to the skin, where it can be dissipated. These adjustments are mediated by a temperature regulating center in the hypothalamus and consist chiefly of reflex constriction of vessels in the splanchnic bed and in other areas coincident with opening of arterio-capillary shunts in the skin. The result is a marked increase in both the quantity and rate of blood flow through the skin. At high temperatures, this may amount to a significant portion of the cardiac output.⁴

Bazett⁵ has shown that during the acclimatization process there is an increase in blood volume. Hypervolemia appears to be necessary in order to compensate for the decrease in extracellular fluid caused by profuse sweating, and in order to maintain adequate

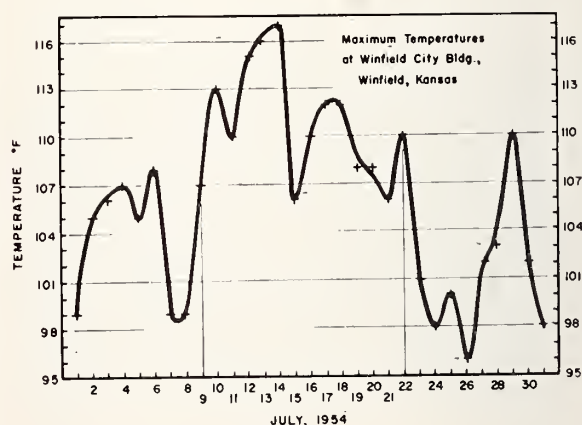


Figure 1.

Presented at the regional meeting of the American College of Physicians, Wichita, Kansas, March 18, 1955. Dr. Steinzeig is a resident in internal medicine, University of Kansas Medical Center.

circulation to the other organs when large amounts of blood are shunted to the skin.

It is not surprising that individuals who are elderly, debilitated, or dehydrated are as susceptible to hot weather as are individuals with cardiac disease or intrinsic defects of heat regulation (e.g., infants and Mongoloids).

THE EMERGENCY

In Figure 1, one can see that the month began abnormally hot. Though these readings portray conditions in a general way, the thick stone walls of the dormitory buildings made excellent insulators so that inside temperatures were actually much higher and remained high for several hours after the outside air began to cool.

By July 4, the weather began to be a subject of great concern. The Winfield State Training School was caring for more than 1,400 patients who varied in age from infancy to senescence. Most were admitted because of mental deficiency per se, although practically every type of organic brain disease and congenital malformation was represented. The population included about 200 Mongoloids in addition to a large group of elderly, debilitated patients and infants, all of whom could be expected to withstand heat poorly.

The usual prophylactic measures were strongly reinforced. Physical activity was restricted, and additional baths were given. The salt content of the diet was increased, and water carts were circulated several times a day. *Food and salt intake was excellent, but a major problem was getting sufficient fluids into the more retarded patients who simply did not drink unless the cup was held to their lips.* In the hospital building, regular dehydration rounds were made for the purpose of giving parenteral fluids to those who were not drinking enough.

No serious effects were observed until July 13, when the temperature reached 116 degrees. Late that afternoon, the first patient with heat stroke was admitted to the hospital. Before the night was over, seven more were admitted. Darkness brought little relief from the heat, and at 7:00 the following morning, the thermometer already measured 106 degrees. By mid-morning, new patients began coming in and it was clear that a full scale emergency was in progress.

A treatment center was quickly organized in the hospital building. Activities not absolutely vital to the operation of the institution were suspended so that all efforts could be directed toward meeting the emergency. Office and maintenance personnel as well as volunteer workers manned shifts around the clock to provide help where needed. The acute wards on the first floor were emptied of all patients who could

safely be moved elsewhere. Long metal-topped dining room tables were set up in the main corridor. Attendants in the buildings were instructed to keep their patients as cool as possible by means of frequent showers and ice packs, and to take rectal temperatures at two-hour intervals. Patients with temperatures above 102 degrees were hospitalized immediately.

That afternoon the outside temperature reached a peak of 117 degrees, and new patients were being admitted at the rate of 10 to 15 an hour. Upon arrival, they were placed on the tables in the corridor where a rapid evaluation was made. In many cases, a good look combined with a hand on the forehead was enough to make the diagnosis. Mild cases were treated on the spot and usually responded within two or three hours. By necessity, these had to be returned to their buildings in order to make room for the new patients who were pouring in continuously. Sicker patients were taken to the acute wards where they could be given better observation and care.

The 250 non-ambulatory chronic patients housed in the hospital required constant attention because they were unable to care for themselves. Fortunately, the three nurseries had recently been air-conditioned. Otherwise these children would probably not have survived.

July 15 was slightly cooler, and with the arrival of additional help it was possible to shift the emphasis in treatment from the hospital to the dormitory buildings. By making rounds several times a day, we were able to discover and treat patients earlier, thus reducing the load on the hospital personnel who could then give closer attention to the acute and chronic wards. In this way, hospital admissions were held to fewer than five per day until July 23, when the weather finally moderated.

PATHO-PHYSIOLOGY OF HEAT STROKE

In a 14-day period, approximately 275 persons received hospital treatment in addition to an unknown number who were treated in the dormitories. Because their illness was characterized by rapidly progressive hyperpyrexia and prostration, the term heat stroke has been used. For the purpose of classification, patients with rectal temperature below 105 degrees were called mild heat stroke. Of the hospital cases, about 250 fell into this category. In addition to hyperpyrexia and prostration, examination revealed dry, flushed skin of poor turgor, parched tongue, moderate tachycardia, and moderate tachypnea.

About 25 patients had rectal temperatures between 105 and 108 degrees and were classified as having severe heat stroke. The clinical findings in one of these cases is shown in Figure 2. The three fatalities were, of course, listed in this group. One such case is

SEVERE HEAT STROKE

75 year old white male

Rectal temperature 108°

BP 160/70; Pulse 140; Resp. 40

Coma

Skin hot, dry and flushed

Dehydration

Oliguria

Figure 2.

summarized in Figure 3. It is interesting to note that all three terminated in profound peripheral vascular collapse. Our patients were not examined post mortem. However, the autopsy findings in 125 fatal cases have been described in detail by Malamud and co-workers.⁶

It would be improper to draw broad conclusions from our rather gross observations. However, some features were so constant that they deserve comment. All of our patients (except when in shock) exhibited cessation of sweating during or prior to loss of temperature control. Furthermore, as treatment was given, resumption of perspiration coincided with clinical recovery. Moderate to marked dehydration was almost always present.

Since the average healthy adult requires two to three liters of water per day to maintain normal fluid balance,⁷ the amount needed to replace what is lost in sweat in high temperatures may be several times that quantity. If this loss is only partially replaced, the kidneys can continue to excrete salt in proportion to water for a time. Some depletion of both body water and electrolytes occurs, but osmotic pressure relationships are preserved. With further dehydra-

FATAL HEAT STROKE

50 year old white male

Rectal temperature 108°

BP unobtainable; Pulse 140; Resp. 40

Coma, Cyanosis, Shock

Skin ashen, hot and moist

Dehydration

Figure 3.

tion, the urinary output drops and the kidneys are unable to excrete enough salt with the water in the urine to prevent the extracellular fluid from becoming hypertonic. The fact that hypertonicity and hemo-

concentration do occur with water depletion is demonstrated in Figure 4 by the laboratory data taken from the case used as the example of severe heat stroke (Figure 2).

Care must be taken to differentiate heat stroke from heat exhaustion, which differs considerably in its physiology and management. The latter occurs in individuals who replace water adequately during prolonged sweating, but who do not replace salt. These patients usually have no hyperpyrexia, but have a moist clammy skin, hypotension, and may complain of muscle or abdominal cramps.

The main features of these diseases are contrasted in Figure 5. *Our patients exhibited almost a pure form of the water depletion syndrome.* It should be emphasized that this can develop quite rapidly during a heat wave. Of course, salt depletion can also occur, but it takes longer to develop. If both are present, then treatment must be individualized with replacement of both water and electrolytes as the situation demands.

SEVERE HEAT STROKE

Serum Na	156 mEq./L.
Serum K	2.92 mEq./L.
Serum Cl	115 mEq./L.
CO ₂	26.2 mEq./L.
NPN	63 mgm.
Hematocrit	58%

Figure 4.

TREATMENT

There are two primary objectives in treatment. First, the hyperpyrexia must be reduced. Since damage to tissues depends on duration as well as degree of hyperpyrexia, the temperature must be lowered as quickly as possible. There is disagreement as to how this should be done.⁸ We found a safe and efficient method to consist of wrapping the patient in a wet sheet covered with a thin layer of crushed ice. This provides cooling effect both by conduction and by evaporation. In our experience, this was considerably faster than sponging or cold baths. The method was applied more than 1,000 times without apparent ill effect.

Secondly, dehydration must be corrected. If used cautiously, the intravenous route is preferable. However, one must be careful not to overload the already straining heart. We used hypodermoclysis almost exclusively because it is so much easier to administer and requires practically no trained supervision. The preferable repair solution in water depletion is 5 per cent glucose in distilled water. Saline is indicated only

HEAT STROKE	HEAT EXHAUSTION
Water depletion syndrome	Salt depletion syndrome
Hypertonic extracellular fluid	Hypotonic extracellular fluid
Intracellular dehydration	Intracellular edema
Terminal circ. collapse	Early circulatory collapse
Treatment: Water, 5% Glucose	Treatment: Saline, Potassium

Figure 5.

if there is also salt depletion. As soon as the patient is able to drink, he can then be given additional fluids by mouth.

Aspirin was given empirically and appeared to be beneficial. The drug is thought to have an effect on the central temperature regulating center in addition to its properties as a peripheral vasodilator. We gave adults a single dose of 15 grains orally. Children were given one grain per kilogram of weight.

The basal metabolic rate rises about 7 per cent for each degree Fahrenheit of body temperature elevation. Since this results in a marked increase in oxygen consumption, we administered oxygen by nasal catheter to the limit of our equipment.

SUMMARY AND CONCLUSIONS

1. Experience with a form of heat stroke under unusual circumstances is described.

2. Dehydration with extracellular hypertonicity and early cessation of sweating would appear to be ex-

remely important factors in the pathogenesis of heat stroke. These events occurring in a susceptible population very likely explain the high incidence of the disease at Winfield.

3. Three deaths were due to acute water depletion rather than to salt depletion such as would be found in chronic heat exhaustion.

4. Fluid replacement should be accomplished parenterally and with 5 per cent glucose in water, unless an electrolyte deficiency also exists.

5. Body temperature can be quickly and safely reduced by wrapping patients in wet sheets covered by a thin layer of crushed ice.

ACKNOWLEDGEMENT

The author would like to express his deep admiration for the staff and personnel of the Winfield State Training School as well as for the many volunteer workers whose collective efforts were responsible for the successful termination of the emergency. Thanks should also go to Miss Leitha Bunch of the Snyder Foundation, Winfield, for the laboratory data, and to Mr. Charles O. Booth of the *Winfield Daily Courier* for supplying weather information.

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One of the weaknesses of this generation is fear. Fear of atomic destruction, fear of cancer, fear of heart attacks, and other fears daily plague the minds of our people. Unless checked, this fear-complex may cause untold harm. As counselors, physicians have an excellent opportunity to combat this epidemic of fear. In the office, at the bedside, through health forums, radio programs, TV shows, and emergency services doctors can alleviate to a great extent fear of dreaded diseases and sudden sickness.

Dan Mellen, M.D., President

Medical Society of the State of New York

Symptoms from Thymic Enlargement in Young Infants

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The enlarged thymus gland as a cause of respiratory disease has been a topic of controversy since early times. In 1830 Kopp presented the theory that there was an etiologic relationship between the hyperplastic thymus and laryngospasm.¹ He introduced the term "thymic asthma" which was widely accepted until Friedleben, in 1858, completely refuted this concept with his anatomic studies.²

In 1889 Paltauf described a condition that he believed predisposed to stridor and even to sudden death in children.³ This he named the "lymphatic constitution." He believed stridor and sudden death were caused by pressure of an enlarged thymus on the large mediastinal vessels and nerves and on the trachea.

As time passed, the role of the enlarged thymus in sudden death received more emphasis, and gradually the term "status thymicolymphaticus" came into being. This was an indefinite syndrome, but it became quite popular and was commonly labeled the cause of death in many infants who died under questionable circumstances.

The studies of Hammar⁴ and Boyd⁵ and others have shown, however, that the normal thymus varies greatly in weight at birth and that the thymus persists throughout life with a wide range of weights at all ages. It has been proved beyond question that thymus glands that are heavier than 20 grams need not be pathologic but rather represent normal structures which have not yet undergone atrophy.⁵ The belief that hyperplasia of the thymus gland is the cause of sudden, unexplained death has diminished markedly since demonstration of the wide variation of normal thymic weights. The studies of Hammar and Boyd have made invalid the anatomic diagnosis of "status thymicolymphaticus."

Occasionally infants are seen who have a variety of symptoms that might be explained on the basis of pressure of an enlarged thymus on surrounding structures. Symptoms thought to be due to some form of respiratory obstruction are many and varied and in the past often were grouped under the term "thymic stridor." Some of these symptoms include crowing, coughing, choking, dysphagia, pallor, asthmatic wheezing, and even shortness of breath and cyanosis.

If any of these symptoms were accompanied by roentgen findings of a widened mediastinal shadow, this was taken as evidence that thymic enlargement was the cause of the patient's symptoms.

However, with more modern diagnostic techniques, these symptoms can usually be demonstrated to be due to other causes, such as congenital heart disease, anomalies of the aortic arch and its branches, anomalies of the larynx and epiglottis, foreign bodies, atelectasis, and infectious or neoplastic lesions of the respiratory tract. These non-thymic factors usually are given prior consideration by most physicians before seriously considering the thymus as the cause.

Occasionally, however, infants are seen who have symptoms which cannot be accounted for by non-thymic factors and who have an enlarged thymic shadow on roentgenograms. Some of these infants have been found to have a rapid and dramatic disappearance of symptoms and shrinking of thymic shadows following irradiation over the thymic area. In the past five years, four such infants have been observed on the Pediatric Service at the University of Kansas Medical Center. The clinical courses of these four infants are presented in this report.

CASE 1

Case 1. K. G., a three and one-half months old colored male, was admitted to the University of Kansas Medical Center with the chief complaint of a harsh cough that had been associated with crying and feeding since the age of four weeks. The infant was said to have coughed daily since coming home from the hospital at one month of age. Four days prior to admission the baby had a severe crying spell, the coughing became worse, and the baby had difficulty breathing. Because the cough continued, the baby was brought to KUMC and was admitted for study.

The mother stated that the extremities of the patient became darker from time to time without apparent cause, even when the baby was not crying. No fever or vomiting had been present and the weight gain had been adequate.

The infant was the product of a full term, normal delivery with a birth weight of 10 pounds, 14 ounces. An omphalocele was repaired three hours after birth, and the patient remained in the hospital for the first month of his life.

From the Department of Pediatrics, University of Kansas School of Medicine, Kansas City, Kansas.

Physical examination revealed a well developed (25 pounds), obese, three and a half-months old male who was alert and in no obvious distress. Examination of the head was negative, and the anterior fontanel was normal in size and tension. The eyes, ears, nose, and throat were normal in appearance. Respirations were noted to be 48 per minute and exaggerated, but no wheezing, crowing, or retraction was observed. The baby would cough occasionally, and when he cried this cough became almost continuous. Both sides of the chest expanded equally, but the breath sounds were suppressed over the right upper anterior chest compared to the left side. Dullness to percussion could not be made out. The remainder of the lung fields seemed to be normal, and the breath sounds were vesicular. The heart sounds were of good quality, and normal sinus rhythm was present. No cardiac enlargement or murmurs were found. Examination of the abdomen was not remarkable except for a transverse scar, the result of umbilical surgery at birth.

Laboratory tests showed the urine to be normal and the red blood count to be 4.62 million cells per cu. mm. with a hemoglobin of 10.8 grams (70 per cent). The white cell count was 10,750 per cu. mm. with 24 per cent polys, 72 per cent lymphocytes, 1 per cent eosinophils, and 3 per cent monocytes. Nose and throat cultures showed the usual flora. An electrocardiogram was normal. A chest x-ray, including postero-anterior, lateral, and fluoroscopic examination showed that the mediastinum was unusually wide. It was felt that this mass represented an enlarged thymus. The remainder of the x-ray was entirely normal.

The patient received two irradiations, a day apart with a total of 296 r. It was noted that symptoms began to disappear the day after the second treatment and the coughing became minimal. The diminution of breath sounds in the anterior right chest that had previously been present was gone the following day, and auscultation revealed the breath sounds equal bilaterally. X-rays taken four days after the last treatment showed a marked decrease in the size of the mediastinal mass. The baby was dismissed from the hospital on the ninth hospital day.

He was returned to the Out-patient Clinic for follow-up in one month. The parents reported that the baby had had no more of his previous symptoms; the cough did not reappear, even with hard crying. Physical examination was entirely negative, and chest x-rays taken on this date also showed that the mediastinal shadow had not returned.

CASE 2

Case 2. F. W., a seven months old white male, was admitted to KUMC with the chief complaint of respiratory difficulty since the age of one month. The

patient was the product of a full term, spontaneous delivery with a birth weight of 7 pounds. At birth the cry was immediate, and there was no respiratory distress or cyanosis. At one month of age the child began having noisy respirations that were first thought to be an upper respiratory infection. However, this symptom persisted and breathing was at times described as "bubbling" in type. He had never been cyanotic or actually short of breath, but when he cried, he frequently made a crowing sound.

During the following months the baby had several upper respiratory infections, and the above symptoms increased and were accompanied by a severe cough. The baby was started on strained foods at three months of age. However, during the month before admission to the hospital he refused all solids, and the mother stated he seemed to have difficulty swallowing them. He was referred to KUMC because of the persistence of noisy respirations and his refusal to eat solid foods.

On admission the patient was a well developed, well nourished, seven months old boy who did not appear acutely ill, but his loud breathing could be heard several feet away. There was a stridor when the baby cried. The neck was short in appearance, and there seemed to be an increase in the amount of soft tissue. The lungs were negative to percussion, and no increase in sternal dullness was noted. No rales were present, but rhonchi were heard throughout the upper lung fields and were thought to be transmitted from the upper respiratory passages. The heart was normal with no enlargement or murmurs. The remainder of the physical examination was entirely normal for a boy of this age.

The laboratory reported the urinalysis as normal; red blood cell count was 3.87 million per cu. mm. with hemoglobin 9.8 grams (64 per cent); white blood cell count was 16,200 per cu. mm. with 21 per cent polys, 70 per cent lymphocytes, and 9 per cent monocytes. Nose and throat cultures showed the usual flora.

X-rays of the chest revealed a shadow in the superior, anterior mediastinal area which was diagnosed as enlarged thymus. Direct laryngoscopy showed no abnormalities, and the nasopharynx was described as clean on palpation except for the presence of a small adenoid pad. The thymic area was irradiated twice with a total of 214 r. It was noted that respirations became much quieter by the day following the second irradiation, and no more wheezing or stridor was noted. Repeated chest films and fluoroscopy in five days showed that the upper anterior mediastinal shadow had decreased markedly in size. The baby was dismissed eight days after admission to be followed by his local physician.

The patient returned to KUMC for follow-up in

six months, and he had had no recurrence of his respiratory symptoms and was eating all solids without difficulty. X-ray examination at that time showed no enlargement of the mediastinum, as was described earlier.

CASE 3

Case 3. L. G., a three and one-half months old white female, was well until one and one-half months of age when she developed a "cold" with nasal discharge and difficult breathing. Respirations were labored with retraction of the chest accompanied by inspiratory wheezing. No fever was present. The nasal discharge cleared up in two days, but stridor continued and the mother noticed that it seemed worse when the baby was lying down. Subsequently the position made little difference and the stridor was present most of the time. The child was treated with penicillin and steam inhalations, but without relief of symptoms, and was admitted to KUMC because the stridor seemed to be increasing. No cyanosis was noted and the cough was minimal. The baby had a good appetite and was gaining weight well.

The birth and developmental history were normal and the family history was non-contributory.

The patient was a well developed, well nourished, white female, three and one-half months of age, who did not appear chronically or acutely ill. The chest had a normal contour, but there was marked inspiratory sternal retraction. Breathing was stridorous with a raspy, coarse, inspiratory sound. Breath sounds were not unusual and no rales were heard. There was no dullness to percussion. Examination of the heart revealed normal sinus rhythm, heart sounds were strong, and no murmurs or thrills were present. Examination of the abdomen, genitalia, head, eyes, ears, nose, and throat was not remarkable.

Laboratory results were as follows: urine was normal except for 2-3 pus cells per low power field; red blood cell count was 4.22 million per cu. mm.; hemoglobin was 10 grams; white blood cell count was 9,600 with 17 per cent polys, 73 per cent lymphocytes, 4 per cent eosinophiles, and 5 per cent monocytes. Tuberculin and histoplasmin skin tests were negative. Direct laryngoscopic examination revealed no abnormal findings. Fluoroscopy and x-rays of the chest showed a soft tissue structure that filled the anterior mediastinum and was separate and distinct from the heart shadow. This mass was interpreted as an enlarged thymus.

The superior mediastinum was irradiated on two occasions with a total dose of 206 r. Repeat x-rays of the chest five days later failed to reveal the soft tissue structure that had been visualized previously. The nursing and house staff noted a marked improvement in the baby's respirations, and the stridor that had been present for one and a half months was now

absent. The baby was dismissed, and communication with the family physician in six months revealed that the girl had done well with no return of stridor or respiratory wheezing.

CASE 4

Case 4. D. D., a white male, four and one-half months of age, was admitted to KUMC with the chief complaint of crowing and respiratory wheezing. This stridor had been noted first at approximately three months of age and seemed to be worse at night or when the baby was on his back. The wheezing was stated to be present almost constantly, occasionally accompanied by a cough. He also frequently "gagged and coughed while eating" but he had gained weight well. Three weeks before admission to the hospital the patient had an episode during which he was reported to have become cyanotic following a severe coughing spell.

The baby was the product of a full term, normal delivery with a birth weight of 7½ pounds. At three weeks of age the baby started vomiting, which shortly became projectile in type. An operation for pyloric stenosis was performed when he was five weeks of age.

This baby, 4½ months old, was well developed and well nourished and weighed 15 pounds, 2 ounces on admission. His chest appeared normal in contour, and expansion was equal bilaterally. The breathing was noisy and wheezing in type, and when the baby was upset there was definite inspiratory substernal retraction. Breath sounds were heard throughout with scattered rhonchi over the entire lung fields. There was no dullness to percussion. No murmurs were heard. The remainder of the physical examination was not remarkable except for a midline epigastric scar.

The laboratory reported the following results: urine was normal; red blood cell count was 3.92 million per cu. mm.; hemoglobin was 9.7 grams; white blood cell count was 13,500 per cu. mm. with 41 per cent polys, 56 per cent lymphocytes, and 3 per cent monocytes. Nose and throat cultures showed the usual flora. Direct laryngoscopic examination revealed no abnormal findings.

Fluoroscopy and x-ray examination of the chest showed a shadow in the mediastinum that was located anteriorly. It was the impression of the roentgenologist that the mass was thymus. A series of three x-ray treatments was given over the thymic area with a total dose of 270 r. Following this moderate irradiation, re-examination of the chest by x-ray six days later revealed a marked decrease in the size of the thymus shadow. It was noted clinically at this time that the patient was breathing much easier, and he was sent home. A follow-up examination was not obtained.

COMMENT

The production of symptoms by an enlarged thymus is probably a rare event. More than 60,000 admissions to the Pediatric Out-patient Clinic and Children's Pavilion occurred in the five years from 1949 to 1954, and the four cases presented here were the only patients suspected of having symptoms related to an enlarged thymus. The four patients form only a small part of the large number of children admitted with similar complaints that were thought to be caused by other factors, and they also make up only a small fraction of the infants who had an enlarged thymus by x-ray examination but were without symptoms.

Roentgen diagnosis of thymic enlargement is still unsatisfactory since standards for normal limits at various ages have never been definitely established. Furthermore, the width of the supracardiac shadow varies in the same person under different conditions such as respiratory phase, cardiac diastole, position of the patient, and increased intra-abdominal pressure. Pancoast's technic for showing encroachment of the thymus on the trachea added little to the exact determination of the size of the thymus because of lack of satisfactory standards for the size and variation of the normal tracheal lumen.⁸ Tracheal encroachment has been reported in more than 50 per cent of young children who were asymptomatic.¹⁹

Small amounts of roentgen therapy were administered to each of the four infants in this report as a therapeutic trial after the other likely causes had been considered and dismissed. The diagnosis of thymic enlargement as a cause of the symptoms was not entertained until it had been demonstrated that symptoms cleared in two or three days after irradiation. Had the symptoms not cleared, further diagnostic tests of a more difficult nature would have been undertaken, including bronchoscopy and perhaps bronchography.

It was felt that a small amount of irradiation was justified as a therapeutic trial before attempting more risky endoscopic procedures. It should be noted that all of these infants had direct laryngoscopy prior to irradiation. This procedure is comparatively easy and safe in infants and can be of considerable diagnostic help when performed by a skilled operator.

The rapidity with which symptoms have cleared following irradiation of the thymus has led to the obvious suggestion that mechanical factors causing pressure on mediastinal structures were responsible for the symptoms. This apparently reasonable assumption probably should not be accepted without some reservations in view of the limited knowledge of the mechanical factors and in view of alternative theories.

Two decades ago Aldrich suggested that such respiratory symptoms might be explained by increased

vagal activity causing spasm of smooth muscle of the respiratory tract.¹² More recently Allen and his group have made a similar proposal.²¹ While neither of these reports produced any conclusive evidence in support of their hypothesis, it is important to realize that alternative proposals have been made and their validity is no less acceptable than the long held view concerning mechanical obstruction by an enlarged thymus.

Sudden deaths do occur in young infants. Post-mortem studies carefully done on large series of such infants have revealed a surprisingly high incidence of infection as a cause of death and have failed to substantiate "status thymicolymphaticus" or enlarged thymus as an acceptable cause of death.^{15, 16, 17, 18, 20}

SUMMARY

Case histories of four infants with respiratory symptoms who received roentgen therapy to the thymic area have been reported. The relationship of thymic enlargement to production of symptoms has been discussed. Proof that thymic enlargement causes symptoms is circumstantial.

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PRESIDENT'S PAGE

DEAR DOCTOR:

There is only one reason for the existence of a medical journal and that is the publication of worth-while scientific articles. The JOURNAL OF THE KANSAS MEDICAL SOCIETY is our official publication for the minutes of our meetings, it carries notice of deaths of our members, stories on county societies and individual activities, and it even has a President's Page read by some 10 to 20 faithful readers. All of these are ancillary to the prime purpose which is the dissemination of medical knowledge.

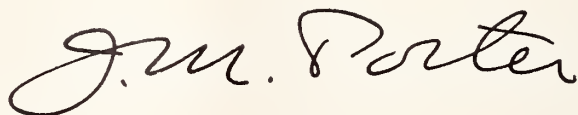
I like to think of our editorial board as men with heavy glasses and worried looks surrounded by a mass of manuscripts, rejecting nine out of ten papers submitted to them. Unfortunately, this is not the case. The JOURNAL OF THE KANSAS MEDICAL SOCIETY desperately needs good material. The backlog of articles which permits variety, editorial discrimination, the publication of timely or seasonal papers, and the like, simply is not there any more.

Why this is true—the multiplicity of journals, the lost itch of the Kansan to burst into print, the failure of speakers to make their contributions exclusive—we will leave to Orville Clark and his efficient staff. The correction of this situation, however, is an urgent problem for every one of us who reads the JOURNAL. You and I must either write articles or we must see that others write them.

First, we must see that interesting material is collected and written up. This can consist of formal papers on general or specialized subjects, simple case reports, statistical analyses, or even discussions of the social, economic, or political aspects of the practice of medicine. Members of the Kansas Medical Society, guest speakers at our larger meetings, youngsters doing research, and old-timers viewing with alarm are all eligible. Once these are written in reasonably good English in a form that a printer can read, they must be submitted for publication. You and I must see that these steps are taken.

To bring this point home I am asking Pauline Farrell to send proofs of this page to all officers and councilors of the Kansas Medical Society and to secretaries of the larger county and district organizations. Thus, even though they regularly skip the President's Page, the matter will be brought to their attention. Later, we may ask for a report as to what has been accomplished.

The burden still falls on the individual member of the Kansas Medical Society. What can you do to help your JOURNAL?

A handwritten signature in cursive script, reading "J. M. Porter". The signature is written in dark ink and is positioned at the bottom center of the page.

EDITORIAL COMMENT

A UNIVERSAL FABLE

There is an ancient legend which tells us that when a man first achieved a most notable deed he wished to explain to his tribe what he had done. As soon as he began to speak, however, he was smitten with dumbness, he lacked words, and sat down. Then there arose—according to the story—a masterless man, one who had taken no part in the action of his fellow, who had no special virtues, but afflicted—that is the phrase—with the magic of the necessary words. He saw, he told, he described the merits of the notable deed in such a fashion, we are assured, that the words "became alive and walked up and down in the hearts of all his hearers." Thereupon, the tribe seeing that the words were certainly alive, and fearing lest the man with the words would hand down untrue tales about them to their children, they took and killed him. But later they saw that the magic was in the words, not in the man.

This was written by Rudyard Kipling, but the fable has a sequel which is not written by anyone. What happened next does not need to be recorded. It is fresh in everybody's memory. It is a universal fable.

The tribe soon learned they could not put to death these words for they skipped endlessly about the village. Then they saw to their sorrow that the man had not been killed either because not only were his magic words alive but now the notable deed he had described was coming to be known as his accomplishment.

The man who first achieved this deed and who was smitten with dumbness pondered the lie sadly, and at last he found his tongue to tell the tribe the true story in his own crude words. When he sat down the tribe shouted that they did not believe him, and they killed him for telling untrue tales and for boasting about himself.

He was quickly forgotten because there arose in the tribe yet another man who had a strong voice. He said, "Do you remember how the story went? Listen, I will tell it to you again." And even though the whole tribe knew this story by heart they marveled as he told it over and over and over again. He did nothing else but repeat the story of this notable deed and, in truth, the tribe made him its chieftain.

From that day to the present the chieftain made the laws and caused the tribe to bow to his wishes. He, with the magic story, now controlled their lives and later, when the tribe once again discovered that

the magic was in the words, not in the man, it was too late.

WHAT'S YOUR PET PEEVE?

With the thought in mind that "audience participation" might make the JOURNAL of more interest to its readers, the Editorial Board has considered many suggestions for columns in which members of the Kansas Medical Society might express themselves. Valid arguments against one idea after another have deterred action by the Board, and few members of the Society have written anything for the JOURNAL other than an occasional scientific paper or a rare editorial.

At a recent meeting the Board considered a suggestion that we inaugurate a "Pet Peeves" column, written by readers of the JOURNAL. From association with physicians over the course of the years, it seems obvious to this writer that most of us have material in mind that could easily be transferred to paper and mailed to the JOURNAL.

It is natural that we are irritated by the peccadillos of others. And it's just as natural that some of our habits are annoying to our associates. Or perhaps it's just a situation that gets star billing on an individual's list of pet peeves. Everyone seems to have something that acts as an abrasive on his tranquillity. We believe a column devoted to the sources of irritation would be interesting, and an exchange of ideas might even result in more harmonious relationships.

It was decided, therefore, that the JOURNAL will begin such a column and will continue it as contributions are received. The wishes of those who prefer to remain anonymous will be respected. Articles may be long or short, as the authors desire, and there are no restrictions on subject matter or style. The Editorial Board will look forward to learning the answer to the question, "What's your pet peeve?"

To start the ball rolling, we print below an example that was written in colloquial style by Dr. Peter V. Siegel for publication in *Missouri Medicine* in a column headed "Crossroads Comment":

"Suppose most folks sometime or other wish old Alex hadn't invented the telephone. Today was one of those days when I just couldn't get anything else done except answer. Always something different though, that's what makes it interesting. Case you sometimes don't answer you always end up wondering who it was and if you were missing something. I have read and heard about all manner of ways of handling the telephone problem but none of them work out excepting answering yourself.

"It would appear that frequently we might all brush up on our telephone manners. There is such a thing and it requires a little more effort than when you are meeting somebody face to face. Bet it never

occurs to some folks that they are very discourteous over the phone.

"A ferinstance. Today was quite an occasion in my book. I had a patient referred to me by a specialist in the city. That happens about as often as hell freezes over and they dont get many cold snaps down there. The referral came via the phone. His secretary placed the call. She acted like I didn't have anything else to do but sit by the phone and wait for it to ring so I should have been there but I wasnt. Reckon about that time I was way up on Haw Creek making a call. Anyhow by the time I got to the hospital the operator had been calling every three minutes. After we made connections the secretary said wait a minute, Doctor wants to talk to you. It could have been most any of seven hundred and eighty five so all I had to do was wait and see. Six minutes later she came back to see if I was still waiting and to reassure me I would only have to wait a minute more.

"Right then is when it happened. At any rate when I place a call I make durn sure the party Im calling doesnt have to wait on me. I just might be asking a favor of him. I dont think its at all unreasonable to expect that little courtesy when someone calls me. Then too its mighty nice to know who you are talking to. That little problem will be solved when we have teleTV or something.

"But wouldnt it be an awful state of affairs if Alex hadent invented the telephone. Incidentally we still have some of his first models in use out here at the Crossroads."

DAYDREAMING

Among the more restful summer diversions is daydreaming. As a substitute for travel it has the advantage of saving expense as well as time. It spares the discomfort of driving or missing scheduled services. You escape carrying suitcases, tipping bellboys, fighting mosquitoes. You can avoid social entanglements with boring people.

Daydreaming has other advantages also. Your casting is superb, the fish strike, and you land beautiful fish one after another. The mountains are clear and cool, and at the seashore you tan a golden brown and never burn at all. The cities are fabulous and filled with endless excitement.

But you can daydream better than that. You can conjure a series of secret adventures of any kind your mood advises and live them through without moving from your chair.

You are not confined to this earth but can wander among the planets and see the universe from the vantage of far away places. Read in a book on astronomy about Betelgeuse or Antares, a couple of the giant stars that dwarf our sun. How large are they?

Put our sun at the center of Antares. Then swing the earth in its orbit at a radius of some 93 million miles from the sun and you still have several million miles to spare before you touch the circumference of this star! And this is but one of countless bodies flying through space so far away that light takes years or thousands of years to traverse the distance.

Does that give you room for your imagination? Does the magnitude of creation leave you with a feeling of awe that among the myriad masses swinging around in space and after the eons while they were exploding and cooling you stand on this particle of dust today to view the universe about you?

What now, little man, of your atom bomb and your income taxes and your right-to-work and your bikini bathing suits and your social security and your withering front lawn? Stand on this precipice of time and space and contemplate the wonder of your existence, of why you are here and what you have done of significance.

But now it ceases to be recreation for a summer day and we are breathing upon words whose meaning we do not understand. . . .

A.M.A. PUBLICATIONS

Dues-paying members of the American Medical Association may receive any one of nine specialty journals, in lieu of the *Journal of the American Medical Association*, should they wish to do so. Although this represents no change in A.M.A. policy, the provision for substituting one subscription for another is reviewed here because some confusion still exists.

Any physician who pays dues to the A.M.A. is entitled to receive, as part of his membership benefit, the *Journal of the American Medical Association*. Many specialists, however, find other A.M.A. publications of more value. As a courtesy to those who prefer specialty journals, the A.M.A. has listed the following publications which may be received instead:

A.M.A. Archives of Internal Medicine

A.M.A. American Journal of Diseases of Children

A.M.A. Archives of Dermatology

A.M.A. Archives of Neurology and Psychiatry

A.M.A. Archives of Pathology

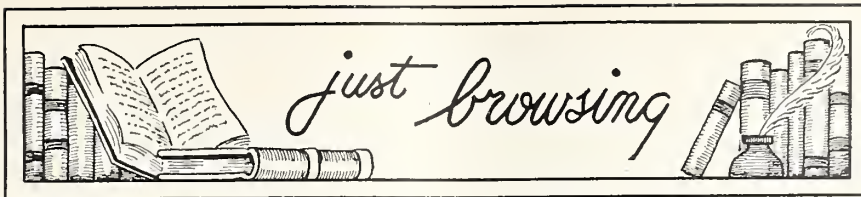
A.M.A. Archives of Surgery

A.M.A. Archives of Otolaryngology

A.M.A. Archives of Ophthalmology

A.M.A. Archives of Industrial Health

A physician who wishes to make a change in the publication he receives should write the Membership-Circulation Department, American Medical Association, 535 North Dearborn Street, Chicago 10, Illinois. In addition to information about the journal he wishes to receive, he should give the name of the publication he has been receiving and the name of his state society.



"I believe it has not yet been published that certain chronic affections of the skin of the nipple and areola are very often succeeded by the formation of scirrhus cancer in the mammary gland. I have seen about fifteen cases in which this has happened, and the events were in all of them so similar that one description may suffice. . . . In all of them the disease began as an eruption on the nipple and areola. In the majority it had the appearance of a florid, intensely red, raw surface, very finely granular, as if nearly the whole thickness of the epidermis were removed; like the surface of very acute diffuse eczema, or like that of an acute balanitis. From such a surface, on the whole or greater part of the nipple and areola, there was always copious, clear, yellowish, viscid exudation. The sensations were commonly tingling, itching, and burning, but the malady was never attended by disturbance of the general health. I have not seen this form of eruption extend beyond the areola, and only once have seen it pass into a deeper ulceration of the skin after the manner of a rodent ulcer.

"In some of the cases the eruption has presented the characters of an ordinary chronic eczema, with minute vesications, succeeded by soft, moist, yellowish scabs or scales, and constant viscid exudation. In some it has been like psoriasis, dry, with a few white scales slowly desquamating; and in both these forms, especially in the psoriasis, I have seen the eruption spreading far beyond the areola in widening circles, or, with scattered blotches of redness, covering nearly the whole breast.

"I am not aware that in any of the cases which I have seen the eruption was different from what may be described as long-persistent eczema, or psoriasis, or by some other name, in treatises on diseases of the skin; and I believe that such cases sometimes occur on the breast, and after many months' duration are cured, or pass by, and are not followed by any other disease. But it has happened that in every case which I have been able to watch,

cancer of the mammary gland has followed within at the most two years, and usually within one year. . . .

"The formation of cancer has not in any case taken place first in the diseased part of the skin. It has always been in the substance of the mammary gland, beneath or not far from the diseased skin, and always with a clear interval of apparently healthy tissue.

"In the cancers themselves, I have seen in these cases nothing peculiar. . . .

"The single noteworthy fact found in all these cases is that which I have stated in the first sentence, and I think it deserves careful study. For the sequence of cancer after the chronic skin-disease is so frequent that it may be suspected of being a consequence, and must be always feared, and may be sometimes almost certainly foretold. . . .

"In practice, the question must be sometimes raised whether a part through whose disease or degeneracy cancer is very likely to be induced should not be removed. In the member of a family in which cancer has frequently occurred, and who is at or beyond middle age the risk is certainly very great that such an eruption on the areola as I have described will be followed within a year or two by cancer of the breast. Should not, then, the whole diseased portion of skin be destroyed or removed as soon as it appears incurable by milder means? I have had this done in two cases, but I think, too late. . . ."

So wrote Sir James Paget in 1874 in describing the disease which still bears his name. In the ensuing 80 years little has been added to the original description except the study of microscopic slides and controversial theories of the origin and nature of the disease. This paper, only 1050 words in length (of which over half is reproduced here), has been described by Boyd as "one of those masterpieces which were commoner in the nineteenth than the twentieth century." Accurate observation and careful recording of facts can demonstrate much without the use of fancy gadgets or elaborate laboratory procedures.—O.R.C.

Clinicopathological Conference

CASE PRESENTATION

This was the first K.U. Medical Center admission for this 74-year-old white male, who was admitted on November 15, 1954, and died 12 days later.

The patient was deaf, senile, and uncommunicative at the time of admission, and no history was obtainable from him. A son stated that the patient was relatively well until 1951, at the time of the flood, when he had an illness diagnosed as pneumonia. He was seen by a local physician who treated him with penicillin. After a somewhat protracted convalescence of six to eight months, the patient recovered.

He remained fairly well until November, 1953, at which time he developed an illness characterized by weakness, weight loss, and a productive cough which was again diagnosed as pneumonia. The patient was treated with penicillin and initially responded to the treatment, but he did not return to the state of health that was his prior to the 1953 illness. Since the onset of the illness, the patient had remained at home, practically bedridden. He had a productive cough, bringing up an undetermined amount of foul-smelling sputum. Approximately one week prior to his admission to KUMC he was hospitalized elsewhere, where one sputum smear was reported as positive for acid-fast bacilli, and the patient was transferred to the K.U. Medical Center.

The patient's relatives denied that the patient had had any previous illnesses or surgery. He had been a farmer, later a railroad worker, and finally had retired.

The patient had one sister who died of tuberculosis when approximately 30 years old, some 30 years ago. There was no other significant family history.

System review revealed only a chronic productive cough, anorexia, and a progressive weight loss of approximately 35 pounds during the past year. He had been a smoker for many years, but relatives denied that the patient consumed alcoholic beverages excessively.

Physical examination revealed an emaciated, elderly, chronically ill white male who was alert to his surroundings but who would not talk and did not understand well. He coughed intermittently during the examination. Fundoscopic examination revealed grade I arteriosclerotic retinopathy. The patient was edentulous. There was no significant lymphadenopathy. There was an increase in the anterior-posterior diameter of the chest with dullness over the left posterior

chest base, decreased breath sounds, and absent tactile fremitus in this area. Bronchial breathing was heard over the right upper lobe. Numerous inspiratory rales were heard throughout both lung fields. The point of maximum impulse was not determined. Heart tones were distant, but there was a normal sinus rhythm and no thrills or murmurs. Fingers appeared slightly clubbed. The rest of the physical examination was not contributory.

Hemoglobin on admission was 11.5 grams or 74 per cent, with a hematocrit of 42.5 cc. White count was 13,750 with 69 per cent polys, of which 66 were filamented and 3 non-filamented. White count one week later was 19,200 with 74 per cent polys. Hemoglobin and hematocrit remained unchanged during the hospitalization. VDRL (serology) was non-reactive. Fasting blood sugar was 102 milligrams per 100 cc. Chlorides were 98 mEq./liter and CO₂ was 36.6 mEq./L. Carbon dioxide four days later was 33.8. Nonprotein nitrogen was 38 and total cholesterol was 140 mgm./100 cc. Skin tests on two different occasions were negative with tuberculin, histoplasmin, blastomycin, and coccidioidin. Sputum culture revealed *Hemophilus influenzae*, highly sensitive to Terramycin and Chloromycetin. Sedimentation rate was 23 mm. in 30 minutes, and 25 mm. in one hour. Blood pH November 24 was 7.34. Three sputums were negative for acid-fast bacilli on smear.

For the first six hospital days, the patient's temperature did not rise over 99.6 degrees. On the seventh hospital day, a fever spike to 103 degrees occurred, subsiding the following day. Temperatures thereafter ranged between 100 and 101 degrees. On the fifth hospital day the patient began receiving Terramycin and postural drainage three times a day. The patient remained relatively uncommunicative during his hospitalization. He ate fairly well and was ambulatory for 20 minutes twice a day. His state of hydration did improve initially; however, on occasion supplementary parenteral fluids were needed. On November 26, 1954, a left supraclavicular node biopsy was done. The pathological report was acute lymphadenitis with slight serous atrophy of fat.

The patient was found dead in bed at 1:00 a.m. on November 27, 1954.

Question: During the time the patient had the protracted illness, did he have a productive cough and was he ever febrile?

Dr. Dowel (resident in medicine): I don't have that information.

Question: Following the lymph node biopsy, was his course the same? Was the patient given oxygen after this?

Edited by Glen R. Shepherd, M.D., and Mahlon Delp, M.D., from recordings of the conference participated in by the departments of medicine, surgery, radiology, and pathology of the University of Kansas Medical Center as well as by the third and fourth year classes of medical students.

Dr. Dowel: No, he was not. There was no essential change in his condition after the biopsy.

Question: Were any cystological studies done on the sputum?

Dr. Dowel: No.

Question: Did the patient have any pain or was he dyspneic?

Dr. Dowel: He had no pain, and while at rest he was not dyspneic at all. I must admit that we did not exert him at all. He was rather tired after going through the morning routine: eating, taking a bath, and postural drainage. He would begin to perk up around noon and feel better.

Question: Did he have any hemoptysis?

Answer: No.

Question: Was the sputum production continuous or did he have intermittent episodes of productive sputum?

Answer: He began producing foul-smelling sputum in 1953.

Question: Could you give us an idea of the amount of this sputum?

Dr. Dowel: When he coughed in the hospital, one to two ounces a day was raised. This varied from day to day. On some days he had difficulty raising sputum.

Question: How long had this patient been non-communicative?

Answer: The patient actually had a hearing aid, but we could never get it to work while he was in the hospital.

Mr. Gene Schillie (student)*: This electrocardiogram shows a sinus rhythm and rate of approximately 75, although there are some irregularities. The P-R interval and the QRS complexes are normal. The RST segment is isoelectric. Flattening of the T wave in V_1 , and an inversion of the T wave slightly in V_4 , V_5 and V_6 suggest that this patient had myocardial ischemia and also a low voltage. The other electrocardiogram is similar.

Dr. Delp: Dr. Lin, you saw this electrocardiogram originally. At that time you commented about the lack of an R spike in lead III. You suggested the possibility, and asked for a repeat, that this patient might have a constrictive pericarditis. Do you think that still might occur to you?

Dr. Lin: That is a possibility, and so is myocarditis.

Dr. Jackson: This tracing with its low voltage is quite possibly due to myocarditis. It is quite possible that there is something to cause a lot of potential to go out across the heart, such as pericarditis for instance, constrictive or otherwise. However, I don't think this tracing can give you that diagnosis.

Dr. Delp: You could be helpful if you said it looks like pericarditis. Does it?

Dr. Jackson: No, I wouldn't go that far, but it is a

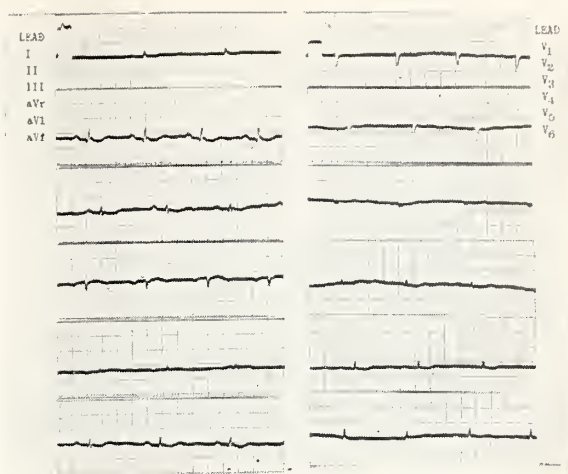


Figure 1. Electrocardiogram taken November 17 and discussed in text.

low voltage and could be compatible with pericarditis.

Dr. Germann (radiologist): The chest film made November 18 showed deviation of the heart to the left and blunting of the left costophrenic angle. There was diffuse haziness of the left chest from the base to the infraclavicular area, with a heavy left hilar shadow. There was an air-fluid level at the level of the sixth posterior rib on the left. The right lung showed rather marked pulmonary emphysema, heavy fibrotic markings, and an increase in the anterior-posterior diameter especially notable on the lateral visualization. It also showed an area of consolidation extending far to the posterior portion of the chest.

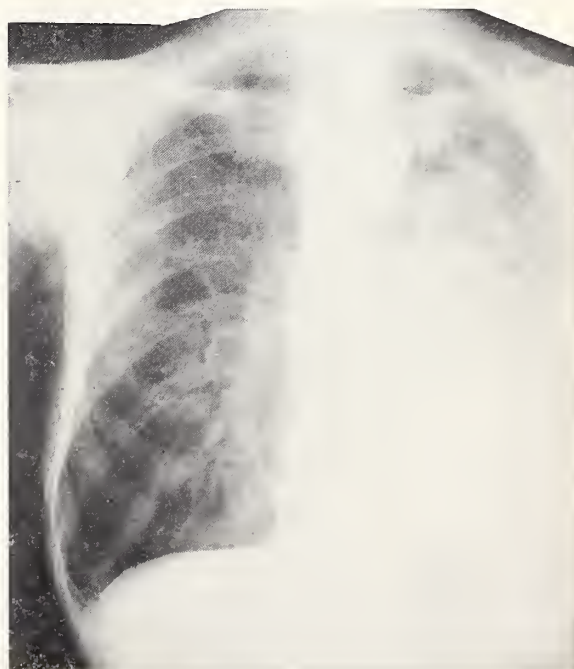


Figure 2. Chest x-ray made November 18.

* Received M.D. degree in June, 1955.

I have the advantage of having seen films taken eight days before these, and I think it makes lots of difference in your thinking. I will read the description of the films taken eight days before. These were outside films that have been returned. "Films taken on November 10, 1954 available for study. There is a rather marked change from this film and the present study. There is a large striking, air-fluid level in the left upper lung field. The lateral films show that this is in the apex of the lower lobe. On this film there is no or little shift of the heart to the left. There is suggestive evidence of a mass posteriorly. There is blunting of the costophrenic angles. There is a suggestion of fluid. Again the pulmonary emphysema is noted. No remarkable infiltration on the right." I think I know what the pathologist found, so I will not go any farther.

Dr. Delp: I want to call on Dr. Fitzpatrick, Dr. Berry, Dr. Weber, and Dr. Christianson later in this case.

DIFFERENTIAL DIAGNOSIS

Mr. David Raab (student)*: The case for today is a 74-year-old white chronically ill male who has a three-year history of bouts of pneumonitis. The first was in 1951; the second was one year prior to admission during which time he had had chronic pulmonary suppuration. He has had symptoms of cough, anorexia, sputum, malaise, weight loss, and other symptoms of a chronic wasting disease.

The physical findings were confined to the chest, including dullness, decreased breath sounds, absent tactile fremitus in the left posterior base, bilateral rales, and bronchial breathing in the right upper lobe.

The signs of pulmonary emphysema were increased A-P diameter and distant heart sounds.

The pertinent laboratory findings were those of compensated respiratory acidosis and a positive smear of acid-fast bacilli reported from another hospital. Sputum culture was positive for *Hemophilus influenzae*. Skin tests were negative. After that time his course was a febrile one resulting in sudden death.

The differential diagnosis today will be based on a productive cough, considering first neoplastic disease. Metastatic lesions could produce a productive cough and could cause the symptoms. This is unlikely because of the chronicity of the disease and the absence of a known primary lesion.

Lymphomas could give this man's symptomatology. The bilateral rales could be due to extensive obstruction. I don't think this is the diagnosis because there was no diffuse lymphadenopathy and no marked bilateral hilar lymphadenopathy.

Bronchial adenoma, a primary tumor, could give this symptomatology and a long history. However, I

would like to rule this out because it is more common in young females, and also because he didn't have any conspicuous hemoptysis or wheezing.

Primary bronchogenic carcinoma of the lung could very well be a possibility. It is said that 50 per cent of primary lung carcinomas are first diagnosed as pneumonia. In any pneumonia which does not clear rapidly, carcinoma should be suspected. He is also of the right age and sex. All the symptoms could go along with this except for absence of hemoptysis. He was a chronic smoker, which may or may not add to this diagnosis. I am ruling this out because of the three-year history and because 90 per cent of such cases die within two years. Also we have a negative biopsy and no evidence of hemoptysis.

Next I shall rule out the congenital causes of productive cough, first considering congenital cystic diseases. This man could have an infected congenital cyst or more than one cyst. He could also have a cyst which was harboring carcinoma. I am ruling this out because it is rare, and it would be unusual for this man's symptoms to begin at 70 years from a congenital lesion.

There are infectious causes of productive cough. Regarding the parasitic and fungus lesions, this patient did not have the symptoms, laboratory findings, nor skin tests that would permit this diagnosis.

Tuberculosis is an important possibility. The patient had the cough in the sputum of which was found acid-fast bacilli in another hospital, a sister who died of tuberculosis in her 30's, and he had all the symptoms of a chronic wasting disease. There were lung findings consistent with this disease. He also had clubbing of the fingers. However, I do not think this man had tuberculosis, because of three negative smears in the face of copious amounts of sputum. I feel that we should be able to find acid-fast bacilli at least one time. Also the cultures were negative. Again, this man had two negative skin tests for tuberculosis, and I am sure that this could have been due to anergy. However, I feel that this patient did not have tuberculosis.

The cough, the sputum, malaise, the positive culture of *Hemophilus influenzae*, leukocytosis, fever, and rales all indicate pneumonia. He probably was more susceptible to protracted pneumonia because of his decreased pulmonary reserve secondary to pulmonary emphysema, and because he couldn't cough effectively since the elasticity of his lungs was gone. I feel that this man did have acute pneumonia while in this hospital.

Next I would like to consider chronic lung abscess. The patient could very well have had a lung abscess complicating the pneumonia in 1951, causing a protracted convalescence. Also the chronic cough productive of foul-smelling sputum is found in 90 per

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cent of patients with lung abscess. The wasting disease with loss of weight, anemia, and cachexia goes along with chronic lung abscess. The circular area in his lung might go along with this, and the fluid level in several areas of his lung would seem to verify this diagnosis. He could have had bronchiectasis secondary to this. I think that this patient did have a lung abscess, or maybe more than one.

The final lesion we ought to consider is bronchiectasis. This man had all the symptoms and signs of bronchiectasis: cough, foul-smelling sputum, weight loss, anemia, and leukocytosis. Some say that *Hemophilus influenzae* is a common organism to culture in cases of bronchiectasis. He could have had pulmonary fibrosis, necrosis, and emphysema secondary to this. Therefore, my final diagnoses are: (1) bronchiectasis with chronic lung abscess, (2) acute pneumonia, while in the hospital, and (3) pulmonary emphysema.

I think that this man probably died of pulmonary infarction, and I think this wouldn't be an unusual finding in a man who has been bedridden and who also has complicating lung disease.

CLINICAL DISCUSSION

Dr. Delp: This patient was found dead in bed. The comment was made that this was not entirely unexpected, but it seems that he died rather suddenly. Can you account for this, Nininger?

Nininger (fourth year student)*: No, it doesn't sound too much like a respiratory death. I think possibly that he could have had a septic embolus to the brain with sudden death. I believe that a pulmonary infarct is possible.

Dr. Delp: Nelson, why was this man disoriented? Was it because of his deafness?

Nelson (fourth year student)*: I think that that accounts largely for why he didn't communicate very well. Outside of that, I can't explain why he should be disoriented. The nonprotein nitrogen wasn't elevated. He had no evidence of neurological signs or symptoms.

Dr. Delp: Dr. Dowel, was this man restless or disturbed during the last day of his life?

Dr. Dowel: No, sir.

Dr. Delp: Schreider, do you have any comments concerning his CO_2 of 36 mEq./L.?

Schreider (fourth year student)*: Well, it's up. It is possible that it could be a complication of bronchial asthma.

Dr. Delp: Does it have any place in this discussion?

Schreider: No, sir.

Dr. Delp: O'Connell.

O'Connell: No, except for the fact that sudden respiratory death might be postulated. He had a very slight pulmonary reserve, and he was probably breath-

ing on his chemoreceptors instead of CO_2 stimulation. These may have eventually failed.

Dr. Delp: Dr. FitzPatrick.

Dr. FitzPatrick: I hope that this statement in your protocol will give you some idea of the appearance of this individual. When Dr. Dowel took me in to see him the night we received him from another hospital, my heart sank. This was a difficult problem to manage as this man had a combined pulmonary insufficiency and an infection. I am sorry that the old x-rays could not be seen by our discussant, as they show without question that this man had an abscess, a rather large one in the superior or apical segment of his middle lobe, and in which a fluid level could be demonstrated.

A few points of interest struck us. Here was a man with an abscess and everything to go with it, who was found in another hospital to have acid-fast bacilli. That is why he was brought here. As the discussant pointed out, if this were a tuberculous abscess there would have been a generous amount of sputum. You would have expected to have found tubercle bacilli or acid-fast bacilli on direct smear of the sputum. This was not found.

The thing that disturbed me most was that we know that most individuals, especially males, have some cause underlying a lung abscess. As Dr. Bachus pointed out in his monograph, the diagnosis of lung abscess in itself is incomplete; it must be lung abscess secondary to something else. Now what was the cause of this man's lung abscess? Most elderly males who are not carefully looked after will have some kind of oral sepsis. Frequently these people aspirate infected material down into the tracheobronchial tree, and thus the lung abscess starts. However, this man was edentulous.

A rule of thumb is that when you have edentulous males with lung abscess you had better start thinking of cancer. We tried to see if this man had a malignancy. We explored the supraclavicular space, and I assure you that the surgeon who did this did it in an atraumatic fashion.

No one was more surprised than I about the sudden death of this man. When we had an opportunity to see why, it was obvious. There are certainly things on his x-rays which we missed and should not have missed.

Dr. Delp: Dr. Weber, I am concerned as to whether the bacillus reported might have been any factor in his illness, and what sort of approach should have been taken with antibiotics.

Dr. Weber: Well, it is reported as the only organism isolated. I think that *Hemophilus influenzae* is an organism that you usually associate with an infection, particularly in children and also in elderly males. I think this did play a part in his infection. The

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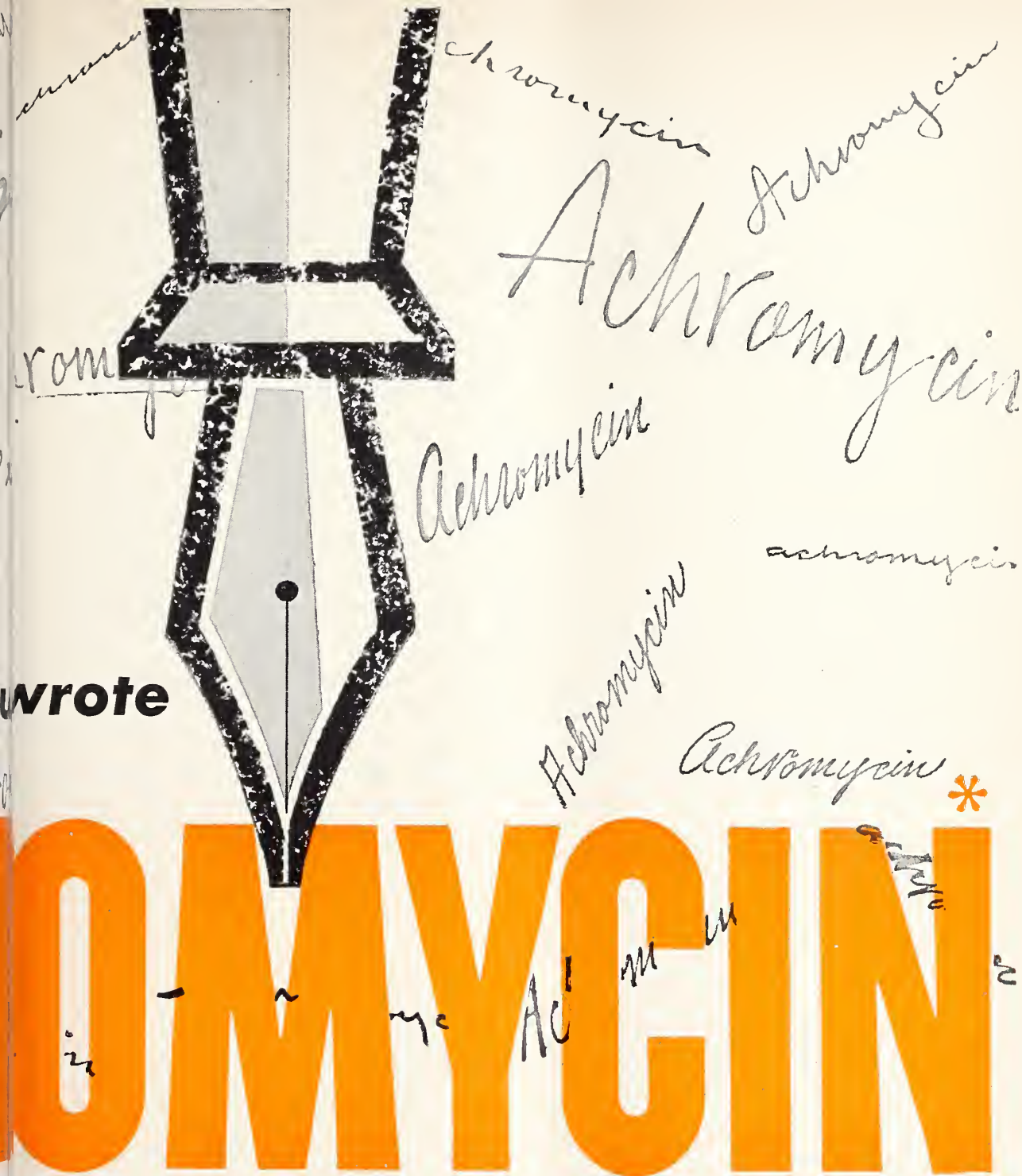
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patient probably did have a lung abscess, as has been shown by x-ray. I think also that the x-ray shows an empyema, and I think he had fluid in his chest. So he had very extensive disease. He had a chronic suppurative disease, and I think he probably had bronchiectasis and lung abscess.

The antibiotic program with *Hemophilus influenzae* is Terramycin and Chloromycetin, but possibly in larger doses than he received.

Dr. Delp: Dr. Berry.

Dr. Berry: Dr. FitzPatrick has made me nervous. I had a diagnosis all lined up until he started talking about different things on the x-ray which we should have seen, and I didn't see anything on the x-rays shown which made me very alarmed about my diagnosis. Now I'm on pretty shaky grounds, but I think from a straight common sense sort of view that this man probably had a lung abscess due to a carcinoma. It is probably an adenocarcinoma of the slow growing type.

Dr. Delp: Dr. Christianson.

Dr. Christianson: Being the last man on the totem pole, Dr. Delp, I think everything has been covered. I was interested a little in the electrocardiogram, but again Dr. Berry and Dr. FitzPatrick shook me up on what I had missed on the x-ray. I thought that with the absence of R waves the patient might have an old infarct on the basis of the electrocardiogram which I have seen, although with the low voltage he well may have had another one.

I think the student's comment about lung abscess is well taken. In my brief experience I think that there are findings of brain abscess. I think that brain abscess is a handmaiden of lung abscess.

Dr. Delp: No one has mentioned unresolved pneumonia. Why not? Isn't it popular to make this diagnosis any more?

Dr. FitzPatrick: I was told never to use the term.

Dr. Berry: I have learned never to use it.

Dr. Lin: Dr. Delp, there are a few words I would like to say. I read the protocol only a few minutes ago, and there are no indications that this patient had a constrictive pericarditis. I think that this electrocardiogram is from an old man with coronary ischemia. I doubt seriously that this man had evidence of myocardial infarction because the chest leads are not too far from normal. His electrocardiogram low voltage is due probably to ischemia and poor nutrition.

Dr. Delp: Everybody is studiously avoiding the CO₂ although I have tried to get some comment. Dr. Bolinger, it has been mentioned that this patient had a compensated respiratory acidosis. I want to know whether his CO₂ at this level might have contributed in any way to his death. If so, is this something that could have been avoided?

Dr. Bolinger: Well, with the finding of respiratory acidosis, and I think that this is what it was, we know that sudden death is not uncommon at this age. We also know that this patient had a large fluid-filled cavity. With a borderline respiratory reserve, I think it is possible that he might have turned over in bed and drowned all at once. Fluid from this cavity rupturing and pouring down another bronchus or something of that sort would have decreased his respiratory reserve so that he died.

Dr. Delp: How could this CO₂ have been altered favorably?

Dr. Bolinger: The only possibility of compensating respiratory acidosis is by increasing respiration. This might have been done with a respirator, or more practically by getting rid of his infection.

Dr. Lin: The darkness of his blood was mentioned, and I think that is a very good point because in chronic chest disease you often see a severe anoxia, and the patient won't recover because of a complicating infection. If you do oxygen studies in this type of patient, you will find severe anoxia. This patient may have had a very severe anoxia which would cause an arrhythmia of the heart.

Dr. Delp: I think those are pertinent comments, Dr. Lin.

PATHOLOGY REPORT

Dr. Peters (pathology resident): The autopsy on this patient was done 10 hours after death. External examination revealed an elderly man whose weight was approximately 120 pounds, and who was markedly emaciated. There was a recent incision in the left supraclavicular area and an ulceration in the left cheek close to the nose. This had a brown discoloration, which we judged to be a skin carcinoma of the face.

When the body was opened, we were struck immediately with the intense foul odor which was reported during his clinical course. On dissecting the chest we found, on the left, marked fibrinous adhesions over the pleura, particularly over the left lower lobe and the lower part of the upper lobe. While dissecting farther we broke into a large empyema cavity, which contained approximately 1200 cc. of greenish yellow fluid which was blood tinged. Cultures taken from this fluid were reported as negative.

The lungs were heavy and firm, weighing approximately 2050 grams together, and on cut section many hemorrhagic elevated nodules were recognized in almost all lung fields. They were from 1 to 2 centimeters in diameter with some larger and some smaller. The bronchi were filled with purulent mucus, and the mucosa of the bronchi was blood streaked and eroded. Dissection of the bronchi into this large

empyema cavity showed that they were slightly dilated, but not bronchiectatic. None of the bronchi which were traced out led to the area of the empyema.

The chest had the contour of emphysema. The upper lobes were markedly emphysematous. The hilar lymph nodes were markedly enlarged and, as reported on the x-ray, there were calcified nodules along the left lower lobe.

The liver was firm, weighing approximately 1230 grams, and slightly congested. The spleen was also congested. The kidneys were in almost perfect shape for a man of this age, though there were a few small retention cysts. The heart weighed 300 grams and was almost in too good a condition for a person of this age with this kind of disease. There was a slight indication of an acute mild fibrinous pericarditis. This could be seen only microscopically and not grossly. The valves also showed slight change. There was mild indication of verrucous endocarditis. However, microscopically there was no real endocarditis.

Cross section of the brain showed a large cystic space of approximately 1.5 cm. in diameter in the left cerebral hemisphere in an area ranging from the anterior portion of the caudate nucleus to the left of the optic chiasm, lateral and superior to the thalamic area. This was lined by a yellowish wall. The cyst itself was filled with clear yellowish fluid.

I think Dr. Wahl will talk about the microscopic pathology of the lungs. The liver showed marked congestive changes. In such areas there was mild evidence of cardiac cirrhosis. The cyst in the brain was an old cyst lined by macrophages which extensively took up iron as shown on the Perle's stain. There were also many foamy macrophages and chronic inflammatory reaction. The bone marrow was slightly hyperplastic, particularly where the white series was concerned.

Just a few words on the lungs. We did serial sections on the lungs in numerous areas and we did all

sorts of staining procedures. We did not find any acid-fast bacteria in any of these areas. Many gram positive cocci were found both in the fresh and in older areas. The bacterial studies of the lungs done at the time of the autopsy showed non-hemolytic staph aureus, green streptococcus, and aerogenes. As I have said before, the empyema cavity was sterile.

Dr. Wahl: There are three lesions of special comment. One is in the brain. The brain lesion of course is an old hemorrhage, at least of some months' duration. It had a hemorrhagic wall.

The other two lesions had to do with the lungs. The most striking thing present was the enormous empyema. In this connection it should be remembered that the empyema cavity was bacteriologically negative. The microscopic sections showed very little evidence of acute inflammatory reaction. It was essentially chronic.

A section of the liver showed considerable passive congestion. The severe passive congestion would suggest a failing heart. This had perhaps developed in the last three days.

There were numerous small abscesses in the lung. This was also a pneumonic area.

A section of the lung showing an abscess also showed a curious body that somewhat resembled actinomycosis. These peculiar staining bodies are not typical of actinomycosis, but they suggest some type of mycotic infection. A very delicate network of mycelia running criss-cross and in various directions is an interesting thing to find in the midst of this purulent material.

Dr. FitzPatrick: In regard to the question you asked Dr. Bolinger, in this particular elderly male individual it would have been very difficult to increase his ventilation—almost impossible. We might have tried to give him some positive pressure breathing with room air plus oxygen in an attempt to wash



Figure 3. Photomicrograph of lung, showing area of bronchopneumonia with early abscess formation. Note clumps of organisms resembling a colony of actinomycetes.



Figure 4. Section through wall of old empyema cavity. Note its heavy fibrous character and the paucity of inflammatory cells.

out CO₂. I think that there is a chance that if we had tapped his chest to remove the empyema, that might have been effective.

Dr. Delp: What do you think about his illness from 1953 on? Where along the line might this outcome have been changed?

Dr. FitzPatrick: Well, this fund of information is all here this morning, but at the time the patient was in here, it was hard to get from scattered members of his family. Actually his living quarters were very poor, and it was difficult to determine when he had the onset. It is possible that he might have had a lung abscess for a whole year.

Dr. Delp: Do you know what happened on the seventh day to cause his fever, Dr. FitzPatrick?

Dr. FitzPatrick: No, sir, I don't. I presume he had a local extension of the infection in his left chest. Possibly the empyema spread farther, but I would be guessing at that.

Dr. Delp: How long had this man been hospitalized before he came here?

Answer: One week.

Dr. Delp: Dr. Weber, is there any time within that one week that other antibiotic therapy might have salvaged this patient? Or do you have that much faith in the ability to cure with antibiotics?

Dr. Weber: No. Not unless it was drained at that time.

Dr. FitzPatrick: I think from the fact that he had an abscess with lots of purulent sputum from which the only organism our laboratory could isolate was *Hemophilus influenzae*, we felt quite sure that he had been receiving a goodly amount of penicillin in the other hospital and probably on the outside. I was not too impressed with the fact, looking on him that first week, that he was having a virulent infection of his lungs due to *Hemophilus influenzae*. I thought it was more or less there as a contaminating organism. His flora had been previously changed by all the other chemotherapy I presume he had received.

Dr. Orr: Well, of course it is foolish to think that you can cure the empyema without surgery. You can't cure abscess anywhere without drainage. Now someone will point his finger at me and say that an appendix abscess will resolve, but what they don't know is that perforation into the gut is the method of resolution. In such a case, drainage has been established. I suppose a small abscess in the tip of one's finger will resolve, but a real abscess that has been walled off requires drainage.

PATHOLOGICAL ANATOMICAL DIAGNOSIS

Primary

Acute and chronic bronchopneumonia of all lobes of the lung, advanced, with two bronchopleural fistu-

lae in the left lower lobe (history of long-standing productive cough).

Possible lung abscess of left lower lobe with rupture.

Empyema of the left chest, 1200 ml.

Fibrous adhesions between the parietal and visceral pleura over the lower lobe of the left lung, advanced.

Fibrinous pericarditis, slight.

Acute tracheitis, moderate.

Hyperplasia of all tracheobronchial lymph nodes, moderate.

Hyperplasia of the hemopoietic system of the bone marrow, slight.

Emphysema of both upper lobes and right middle lobe of the lungs, moderate.

Dilatation of the right side of the heart, moderate.

Acute and chronic passive congestion and cardiac cirrhosis of the liver, moderate.

Fatty metamorphosis of the liver, moderate (history of 25-pound weight loss over period of one year and of inadequate diet).

Submucosal hemorrhages of the stomach, duodenum, and focally within the small intestine and rectum, moderate.

Small erosions within the duodenal mucosa, slight.

Varicose veins in the lesser curvature of the stomach, slight with dilatation of veins in the esophagus.

Focal petechial hemorrhages over the mitral valve of the heart, slight.

Recent linear incision over the left clavicle (history of lymph node biopsy one day before death).

Emaciation, body length approximately 70 inches, weight approximately 120 pounds. Tubular deformation and lipid depletion with focal areas of intertubular hemorrhages of the adrenal, moderate.

Vacuolization of the basophilic cells of the pituitary, slight.

Multiple puncture wounds in both antecubital fossae, both forearms and upper arms (history of venoclyses and injections for 12 days before death).

Accessory

Verrucous endocardiosis of the mitral and tricuspid valves, slight.

Fusion of the leaflets of the aortic valve, slight.

Fenestration of the posterior leaflet of the aortic valve.

Arteriosclerosis of the ascending aorta, of the basilar arteries of the brain, of the coronary arteries, slight; of the lower part of the abdominal aorta with ulceration and thrombus formation, moderate.

Remote infarct with cystic degeneration within the left cerebral hemisphere.

Calcified nodules in the left pulmonary hilar region.

Multiple small fibrous nodes within liver and spleen.

Nodular hyperplasia of the prostate, slight (history of nocturia and frequency for unknown duration).

Atrophy of both testes, moderate.

Hyalinization of islets of the pancreas, slight.

Osteoporosis of the vertebral column, slight.

Hypertrophic arthritis of both knee joints, moderate.

Mycosis of the big toe of the right foot, advanced.

Possible basal cell carcinoma of the skin over the left nose and cheek.

KANSAS STATE PEDIATRIC SOCIETY TO MEET

A scientific program will be presented by the Kansas State Pediatric Society at a meeting to be held at the Broadview Hotel, Emporia, on Saturday, September 10. Dr. James Baty, Boston, and Dr. Herbert A. Wenner, of the University of Kansas Medical Center, will be speakers.

Dr. Baty will present three papers on the following subjects: "Psychosomatic Problems," "Emergencies in the Newborn," and "Colic." Dr. Wenner will address the group on "Current Research in Poliomyelitis."

The day's program will begin at 10:00 in the morning. Two papers will be presented before the luncheon meeting and two papers in the afternoon, followed by a business meeting and dinner.

Registration is not limited to pediatricians. All physicians who are members of the Kansas Medical Society are eligible to attend.

BOARD OF HEALTH APPOINTMENTS MADE

Dr. Ivan W. Cain, Kansas City, Dr. Richard E. Speirs, Dodge City, and Mr. D. C. Wesche, Manhattan, were recently appointed members of the Kansas State Board of Health by Governor Fred Hall. Their terms will expire in May of 1958.

The terms of four members of the board will expire in May of 1957. Those four are Dr. H. St. Clair O'Donnell, Ellsworth, president; Mr. Wilber Murray, Hutchinson, vice-president; Dr. H. Penfield Jones, Lawrence, and Dr. George M. Coffey. Dr. Coffey is a dentist.

Remaining members of the board, whose terms will expire in May of 1956, are Dr. Robert C. Polson, Great Bend, Sr. M. Aloysia, Wichita, and Dr. Thomas P. Crispell, Parsons. Dr. Crispell is a veterinarian.

TELEVISION PROGRAMS FOR 1955

Twenty-five television programs planned for local showings are being prepared by the A.M.A. Bureau

of Health Education and are now available. Medical societies may arrange for showings.

One series, "What To Do," consists of six five-minute films on backache, hay fever, eye injury, skin problems, baseball finger, and dizziness. "Script clips" include six films and accompanying scripts to be narrated by a local doctor. The subjects are normal eyesight and common defects, exercise and your heart, industrial accidents, the nervous system, polio, and prevention of crippling in arthritis.

A series of 13 rural health scripts, to be used in live participation shows, covers rabies, brucellosis, home pasteurization of milk, pure water supply from farm wells, balanced diet, septic tanks, the place of minerals and vitamins in diet, food for growth and medical care, weight control, health examinations, family physician, accidents in the home, and health insurance.

POLIO RESEARCH CONTINUES

The search for strains of live virus suitable for use in polio vaccine will be continued at the University of Kansas Medical Center under a grant of \$105,116 from the National Foundation for Infantile Paralysis. The grant was awarded on July 1.

Dr. Herbert A. Wenner, research professor of pediatrics, will direct the research, assisted by Dr. C. Arden Miller, assistant professor of pediatrics; Dr. Jacqueline Baumeister, instructor in pediatrics, and Dr. George Dubes, research associate.

GOLDEN BELT SOCIETY MEETS

Members of the Riley County Medical Society were hosts to the Golden Belt Medical Society at a meeting held at the Manhattan Country Club on July 14. The afternoon program consisted of a panel discussion on hypertension with Dr. E. Gray Dimond, of the University of Kansas Medical Center, as moderator. Participants were Dr. Severt A. Anderson, Clay Center; Dr. Robert M. Carr, Junction City; Dr. Alfred J. Horejsi, Ellsworth, and Dr. Robert Sohlberg, McPherson. An informal program followed the dinner hour.

"The doctor draft is unjust. Its extension would mark the first time in our history that any group of citizens has been singled out for conscription in peace time because of their professional skill."—*Chicago Tribune, June 10, 1955.*

Infectious Hepatitis Complicating Pregnancy

Robert H. Finkle, M.D.

Kansas City, Missouri

The metamorphosis of acute yellow atrophy of pregnancy into pregnancy complicated by infectious hepatitis has indeed been slow. In 1937, the American Committee of Maternal Welfare classified acute yellow atrophy of the liver as a toxemia of pregnancy, and this same classification persisted up to 1947.¹ During this period of time, many authors believed that liver damage was a possible etiologic agent of toxemia of pregnancy. This viewpoint was inferred from the association of hypertension, albuminuria, edema, and convulsions in patients terminating with acute yellow atrophy of pregnancy.

However, in 1947 Zondek² showed that infectious hepatitis complicating pregnancy could assume three different clinical courses and that it was in the most severe form of the disease that acute yellow atrophy occurred. Subsequent to this publication, enthusiastic support of this opinion was shown by Mallory,³ Wood,⁴ Lucke,⁵ Dill,⁶ and others, so that today acute yellow atrophy is no longer thought of as a disease peculiar to pregnancy, but rather that it is the terminal phase of severe liver damage. The etiology of this damage is of an infectious or poisonous nature. It is with the former, specifically viral infectious hepatitis complicating pregnancy, that this paper is concerned.

The specific etiologic agent of infectious hepatitis is a filterable and heat stable virus, as is the agent of homologous serum jaundice.^{7, 8, 9} Homologous serum jaundice implies that transmission of the disease is through the medium of infected plasma, serum, whole blood, and contaminated needles and syringes. The mode of transmission of infectious hepatitis is by direct or indirect contact with feces of persons suffering from the disease, although nasopharyngeal washings have been shown to transmit infection in human volunteers, as have contaminated needles and syringes.^{8, 9, 10, 28}

The incubation period of infectious hepatitis is 8 to 42 days with the disease having its appearance in about 30 days following contact with contaminated material in the majority of cases.^{7, 11, 12} The incubation period of homologous serum jaundice varies from 40 to 180 days with an average of 55 to 135 days following inoculation.^{8, 9} No cross immunity be-

tween serum hepatitis and infectious hepatitis has been demonstrated.

This lack of cross immunity, the different incubation periods, the different modes of transmission, the failure of homologous serum jaundice to spread from patient to patient, and frequent spread of infectious hepatitis are the best evidence that homologous serum jaundice and infectious hepatitis are two distinct clinical entities, either as two entirely different agents or two immunologically distinct strains of the same agent.^{8, 9}

The pathologic lesions of infectious hepatitis and homologous serum jaundice are essentially the same.¹³ There is an acute zonal hepatitis with centrilobular necrosis and autolysis of parenchymal cells, disorganization of the liver cell columns, and a leukocytic and histiocytic infiltration of the periportal areas.^{9, 13} The reticular framework of the liver lobule is not destroyed, and regeneration of surviving parenchymal cells results in restoration of the normal lobular pattern. This is the usual sequence of events with recovery being the rule.

Massive hepatitis with acute liver atrophy may ensue, however, when there is an excessive virulence of the infective agent, or when there is an increased susceptibility to the agent of ordinary virulence.¹³ Such susceptibility is a consequence of previous liver damage, exposure to hepatotoxic agents, malnutrition, alcoholism, and pregnancy. This, as will be seen later in the discussion of the clinical course of the disease, is the important factor in the management of maternal hepatitis; the prognosis of the patient depends primarily upon the extent of the hepatic lesion. If the centrilobular necrosis is not severe, the prognosis is excellent. However, if the hepatitis proceeds to the extent of generalized massive hepatitis, subacute massive hepatitis with post-necrotic scarring or death from acute liver atrophy is the result.¹³ The latter is the more common course of events when massive hepatitis is associated with pregnancy.

Infectious hepatitis complicating pregnancy is not unlike infectious hepatitis in the non-pregnant individual in that it may exhibit a marked variation in severity of clinical symptoms and laboratory findings. Clinically there are four stages of the disease: pre-icteric, icteric, convalescent, and the final or end stage of the disease.

In the pre-icteric stage, symptomatology consists of anorexia, nausea, vomiting, asthenia, vague epigastric

This is one of 11 theses, written by fourth year students at the University of Kansas School of Medicine, selected for publication by the Editorial Board from a group judged to be the best by the faculty at the school. Dr. Finkle is now completing his internship at St. Mary's Hospital, Kansas City, Missouri.

distress, and constipation. These symptoms are not specific and are easily misinterpreted as common phenomena of pregnancy. Physical findings may be lacking, although there may be right upper quadrant tenderness, low grade fever, lymphadenopathy, and palpable liver enlargement. Hepatic enlargement frequently occurs prior to the onset of jaundice.^{9, 13}

The icteric stage is marked by the onset of jaundice. Gastrointestinal complaints persist and may be accentuated by the onset of intractable vomiting. Headache, restlessness, and psychic instability may occur. Physical findings include increased liver enlargement to 3 to 4 cms. below the costal margin, splenic enlargement in 85 per cent of cases, and bradycardia. Hepatomegaly usually correlates with the prognosis of the disease, reaching a maximum on the average in 16 to 17 days and then starting to recede.⁹

The convalescent stage is marked by a recession of clinical and laboratory findings. This follows the icteric stage and is the usual sequence of events. However, progression to the final or end stage of the disease may occur. This latter is marked by an increased icterus, diarrhea, mental confusion and apathy, tremors, flapping movements of the hands and wrists, muscular rigidity, abnormal reflexes, dilated pupils, rapid and thready pulse, fetor hepaticus, hemorrhagic phenomena, and decreased liver size. These are late and ominous signs indicative of acute liver atrophy and hepatic failure.

Laboratory findings in the pre-icteric stage may be lacking. Swift et al.²⁷ recorded bilirubinuria and an increased urobilinogenuria as the first detectable abnormal laboratory findings. Sodeman⁹ noted elevated thymol turbidity and cephalin flocculation reaction as well as abnormal bromsulfalein and alkaline phosphatase retention in approximately one-half of his cases. The icterus index and van den Bergh tests are elevated prior to the onset of jaundice. The van den Bergh is at first indirectly, and later both directly and indirectly, elevated with further increments of the icterus index. Other findings of the icteric phase include leukopenia, depressed total protein, especially the albumin fraction with increased globulin fraction, prolonged prothrombin time, abnormal bromsulfalein and alkaline phosphatase retention, and further elevations of the thymol turbidity and cephalin flocculation reaction.

These findings become reversible as the patient enters the convalescent stage, although persistence of an elevated thymol turbidity and cephalin flocculation reaction for one to three months is not unusual. Progressively decreasing blood urea level with elevated amino acid and non-protein nitrogen, decreasing total cholesterol and cholesterol ester blood level, absence of urinary bile, decreasing total protein with inversion of the albumin-globulin ratio, elevated serum ammonia, elevated lactic and pyruvic acid

levels, and persistent hypoglycemia in the presence of excessive carbohydrate intake are signs of severe impairment of liver function. They signify the end stage of the disease with acute liver failure.

The differential diagnosis of jaundice in the pregnant and non-pregnant individual is identical with one exception—toxemia of pregnancy may produce jaundice. Biliary tract disease, chemical intoxication, neoplasia, heart failure, and hematologic, infectious, and parasitic processes must be differentiated.

Biliary tract obstruction and cholecystitis are common, while maternal infectious hepatitis is rare. X-ray examination will reveal stones and a non-functioning gallbladder, while increased alkaline phosphatase and bilirubin in the presence of decreased or absent fecal and urinary urobilinogen will indicate obstruction. The lack of a history of exposure to chemical poisons and other toxins, including mushrooms (*Amanita phalloides*) and snake venom, rules out the possibility of chemical poisoning. Cirrhosis is differentiated by a history of alcohol ingestion and poor nutrition with physical findings of portal hypertension—ascites, splenomegaly and esophageal varices, spider angiomas, liver palms, and liver punch biopsy.

Neoplastic disease, primary or metastatic, may require in addition to a careful history and physical examination the use of x-ray examination, the laboratory, and lymph node biopsy. Although malignancy is less frequently seen in the child bearing age, leukemia, Hodgkin's disease, secondary liver metastases, and primary carcinoma of the head of the pancreas, liver, and bile ducts must be considered. Heart failure is differentiated by physical findings alone. Patients with homologous serum jaundice will present a history of exposure and a more prolonged incubation period.

Transfusion reaction must be considered in patients receiving whole blood transfusions. Sick cell anemia, less commonly found in colored females than in the male, will present sickling of the erythrocytes and an increased erythrocyte fragility. Splenic anemia exhibits splenomegaly, characteristic blood cell findings, and an increased indirect with a normal or slightly elevated direct serum bilirubin. Infectious processes such as typhoid and typhus fever, Weil's disease, syphilis, tuberculous hepatitis and cholangitis, and parasitic infestations such as *Echinococcus*, amebiasis, yellow fever, and malaria may be distinguished by a history of exposure and characteristic clinical and laboratory findings.

The greatest difficulty in diagnosis occurs in the pre-icteric stage of the disease when the symptom complex of anorexia, nausea, vomiting, asthenia, and epigastric distress is interpreted as common phenomena of pregnancy. Frequently the patient's complaint will be that of a recent upper respiratory infection or a persistent attack of the "flu." Physical examination

and laboratory findings at this time may be entirely negative, and the patient may be dismissed without arrival at the correct diagnosis. A history of exposure to hepatitis or a recent outbreak of epidemic hepatitis increases the likelihood of the disease.

The interval of time between the onset of symptoms and the appearance of jaundice is 2 to 18 days with an average of 5 to 14 days.⁹ Corresponding liver enlargement and tenderness, lymphadenopathy, and suggestive laboratory findings may be present at this time to confirm the diagnosis. A high index of suspicion followed by a repeat examination in 6 to 10 days will make earlier diagnosis possible and thereby greatly improve the prognosis.

Infectious hepatitis in the first and second trimesters of pregnancy seems to carry no more serious a prognosis for the mother than infectious hepatitis in the non-pregnant individual; patient recovery depends upon severity of the hepatitis. However, once the patient enters the third trimester and approaches term, the maternal mortality is adversely affected and fetal salvage is reduced. Pregnancy, during the last trimester especially, is therefore a decisive factor in aggravating the clinical course of infectious hepatitis. Why the last trimester of pregnancy has such an effect is not definitely known. However, it is known that the severity of infectious hepatitis is increased in cases of undernutrition.¹³

Evidence is available that nutritional deficiency is a factor tending to promote or at least favor liver injury in man and laboratory animals.¹³ In the patient with an excessive amount of vomiting during the first and second trimesters, and the resultant decreased dietary intake secondary to nausea and anorexia, nutritional reserves are decreased and may even be depleted. Add to this the increased need of dietary protein during pregnancy, and it is easy to speculate that undernutrition is an important factor in the conversion of simple hepatitis of pregnancy into that of acute yellow atrophy. Then, too, impairment of the portal circulation may result secondarily from an enlarged uterus impinging upon the portal blood vessels. Therefore it is to be remembered that the prognosis may be poor in the third trimester and grave when undernutrition is concomitantly present. Also, as is the case in any other disease process, early diagnosis and institution of therapy will improve the prognosis. If the patient is moribund or comatose before therapy is instituted, little is to be expected from the best means of management.

Fetal and neonatal prognosis in maternal hepatitis varies with the severity of the clinical course of the disease. When mild or moderately severe hepatitis is encountered, pregnancy will, in all probability, follow its normal course. However, in severe hepatitis premature delivery and spontaneous abortion may be expected, depending upon the trimester of preg-

nancy. This abortive action results from the influence of the liver failure or from the debilitating effect of the disease upon the pregnant mother. It has been shown experimentally that liver damage and failure can induce abortion.²⁶ The extirpation of one-third of the liver does not prevent the normal course of pregnancy, whereas the excision of one-half or more of the liver results in the immediate termination of pregnancy.²⁶

Gellis et al.,³⁶ Stokes and Neefe,³⁷ and Havens³⁸ have demonstrated the value of gamma globulin administered parenterally in the prevention of infectious hepatitis. This is of value in preventing the disease if given prior to the onset of symptoms, but is of no value in prevention once symptoms have occurred. Recommended doses vary from 0.06 to 0.15 cc. per pound of body weight given intramuscularly. Passive immunity continues for six to eight weeks.⁹ The immediate use of prophylactic gamma globulin in patients exposed to hepatitis or during outbreaks of epidemic hepatitis is of definite value and is to be encouraged.

In the successful management of maternal infectious hepatitis, one must bear in mind the dual nature of the problem that exists. Not only must active therapy be instituted promptly to prevent further and more severe liver damage, but special attention must also be devoted to the course of delivery and postpartum care. However, due to the primary nature of the disease and the associated high mortality rate, management of hepatitis is of prime importance. It is necessary, as a result of the infectious nature of the disease, to isolate the patient and to use isolation technique with the patient's excreta and with contaminated needles and syringes.

The liver has remarkable regenerative power and exhibits spontaneous reproduction of functioning liver parenchyma if the action of the injurious agent is arrested and the necessary dietary essentials are available for cellular reproduction. Indeed, as long as the reticular framework of the lobule is intact and there are surviving parenchymal cells, regeneration will result in restoration of the normal lobular pattern.¹³ Since there is at this time no specific anti-viral agent available, management must be directed along the course of decreasing liver susceptibility to damage and promotion of optimal conditions for regeneration of the liver parenchyma. To fulfill these needs, complete bed rest, diet, vitamin supplements, and the avoidance of additional trauma to the liver are mandatory.

Factors injurious to the liver that are to be avoided include surgical operations, secondary infections, and the exposure to hepatotoxic drugs. Operative procedures are contraindicated because of tissue trauma incident to surgery and the use of anesthetics, which are hepatotoxic. Ether, chloroform and ethylene are

the most dangerous anesthetics in liver injury.³² Secondary infections of all types produce adverse effects in infectious hepatitis and therefore require prompt attention. Alcohol, opiates, and barbiturates are contraindicated in all stages of hepatitis. Alcohol produces a toxic effect, whereas the latter drugs produce prolonged and exaggerated effects and are capable of precipitating hepatic coma.

The utilization of a high carbohydrate, high protein, low fat diet is indicated in infectious hepatitis.^{9, 13, 25} Opie¹⁴ and Mann¹⁵ have shown that high carbohydrate intake prolonged the life of experimental animals with induced liver damage. Mann and Bollman, working with animals poisoned with phosphorus and carbon tetrachloride respectively, showed that the animals maintained on a high carbohydrate diet lived longer than the animals not maintained on such a diet, other factors being equal.²⁴ Mann, working with Eck fistula dogs with complete hepatectomy, showed that the dogs died from the effects of hypoglycemia long before signs of liver insufficiency could supervene unless large quantities of glucose were administered.²³ In addition to the above, glucose is necessary for glycogen metabolism of the liver and for its conjugation of phenol groups with glucuronic acid.¹⁶ Therefore, the indications for a high carbohydrate diet are threefold: to prevent further liver damage due to nutritional deficit, to prevent death secondary to hypoglycemia, and for the protein sparing action of carbohydrate.

Patek reported in 1937¹⁷ and later in 1948¹⁸ that a high protein intake was indicated in liver injury. Definite liver lesions have been extensively reported as occurring in animals maintained on diets with insufficient protein.^{13, 19, 20, 21} Suffice it to say, without quoting the extensive literature on this subject, that a high dietary protein is definitely indicated in infectious hepatitis. The value of a low fat diet stems from the fact that it is believed that diets rich in fats provide an increased susceptibility to liver damage by predisposing to fatty infiltration of the liver.^{13, 22} However, not all authors believe that fat restriction is necessary in the presence of adequate dietary protein.

At this center, dietary management consists of a high protein, high carbohydrate diet without fat restriction—specifically the Patek diet. This consists of 140 grams protein, 375 grams carbohydrate, and 50 to 100 grams fat. This total intake is dispersed throughout the day with interval feedings. Supplementary vitamin therapy with the B complex group (thiamine, riboflavin, nicotinamide, pyridoxine, and pantothenic acid) and vitamins A, C, and K has been recommended, especially if the dose is therapeutic without large unbalanced doses of individual vitamins. Vitamin B₁₂ has been recommended as it stimulates protein regeneration and exerts a lipotropic

action. The value of methionine and choline is suggestive but not proved, and its use depends upon the individual physician.³²

In severe liver damage with the appearance of irrationality, irritability, and unresponsiveness of the patient signifying impending hepatic coma, therapy becomes more difficult. The patient is no longer capable of taking sufficient nutrition orally, and this must therefore be given via stomach tube or intravenous infusions or both. The former is preferable but less possible without the patient's co-operation. Intravenous infusions of dextrose, protein hydrolysates, and amino acid solutions are the best means of supplying the patient's nutritional requirements. Large amounts of dextrose up to 3 to 4 liters daily may be necessary to prevent hypoglycemia.^{41, 42} Whole blood and albumin solutions are indicated to correct secondary anemia and depressed serum proteins.

With the low dietary intake and diarrhea associated with hepatic coma, there is a depression of the serum electrolytes, specifically sodium, potassium, magnesium, and calcium.⁴⁴ A metabolic acidosis occurs secondary to elevated ketoglutaric, pyruvic, and lactic acids. This is a consequence of the inability of the liver to remove these acids.⁴⁴ Therefore, correction of electrolyte disturbances and altered acid-base balance remains a constant problem. Oliguria, frequently associated with hepatic insufficiency and coma, results in an increased circulating blood volume. Caution must therefore be exercised in vigorous intravenous therapy to prevent the development of cardiac decompensation.

Impairment of the ability of the liver to convert ammonia into urea results in an elevated serum ammonia. This produces cellular intoxication and aggravates the clinical picture of hepatic insufficiency. The production of ammonium intoxication presents a picture resembling that seen in hepatic coma.^{44, 45, 46} Ammonium salts are therefore contraindicated. The administration of glutamic acid decreases the serum ammonia level. Such action results from the utilization of ammonia in the conversion of glutamic acid to glutamine.⁴¹ Antibiotics and non-absorbable sulfa preparations that inhibit bacterial growth in the intestinal tract and thereby rid the tract of urea-splitting organisms are beneficial. What urea is produced is then excreted, whereas previously some of the urea would have been converted back into ammonia. This may ultimately be the explanation of the unknown beneficial effect of Aureomycin in the treatment of hepatic coma.⁵⁹

The use of ACTH and cortisone is controversial. They have been shown to produce marked improvement in severe cases of hepatitis. However, there are certain dangers associated with their use in maternal hepatitis. These are sodium and water retention and potassium depletion, which further aggravate the dis-

turbed electrolyte imbalance. Oliguria and diarrhea associated with hepatic coma contraindicate their use. Then, too, the dose of cortisone must be reduced gradually following active therapy. Otherwise the patient will regress to a clinical status worse than that prior to its use. Cortisone is of value in selected cases if it is used properly to prevent adrenal insufficiency secondary to its withdrawal.

Sedation is necessary to control irritability and convulsions. Morphine and barbiturates are contraindicated because of prolonged action and effect as mentioned previously. For control of excitability, demerol or codeine and aspirin is satisfactory. In the patient with extreme irritability, excitability, and convulsions, paraldehyde is the drug of choice.

In the obstetrical management of maternal hepatitis, the objective is to bring the patient to term with delivery of a viable fetus while keeping maternal mortality at a minimum. During the first and second trimesters the severity of the disease is mild with resolution of the disease following bed rest, adequate nutrition, and general supportive therapy. Obstetrical interest is that of any other infectious process complicating pregnancy, that is, to correct any abnormal disease process which may produce complications when the patient nears term. The difficulty in obstetrical management arises when the patient in the late second or early third trimester with a previable fetus develops a severe hepatitis with impending hepatic failure. Should the patient be allowed to go to term when pregnancy is known to exert a deleterious effect upon maternal hepatitis, or should artificial interruption of pregnancy be performed when the procedure itself is capable of inducing further liver damage and precipitating hepatic failure?

If there are positive signs that the fetus is dead, the course is obvious. It is that of waiting for spontaneous delivery of the fetus, while active and vigorous therapy is directed toward reducing the severity of the hepatitis. Artificial interruption is not to be accomplished as this offers the patient nothing other than exposing her to further liver damage from the procedure itself. The patient will abort spontaneously at a later more favorable date, and there are no harmful effects resulting from the retention of the uterine contents.

With a previable fetus, every effort should be made to carry the patient to term with a normal spontaneous delivery. The delivery should be accomplished by the simplest, easiest, and least disturbing method to the maternal physiology. However, if acute hepatic failure appears inevitable, artificial interruption of the pregnancy seems justified by the fact that death of the mother may ensue or the product of gestation may be a dead, macerated fetus if the pregnancy is allowed to continue. If interruption is planned, it should be performed long before the hepatitis has

become severe, for such a procedure is itself capable of precipitating hepatic failure and death.

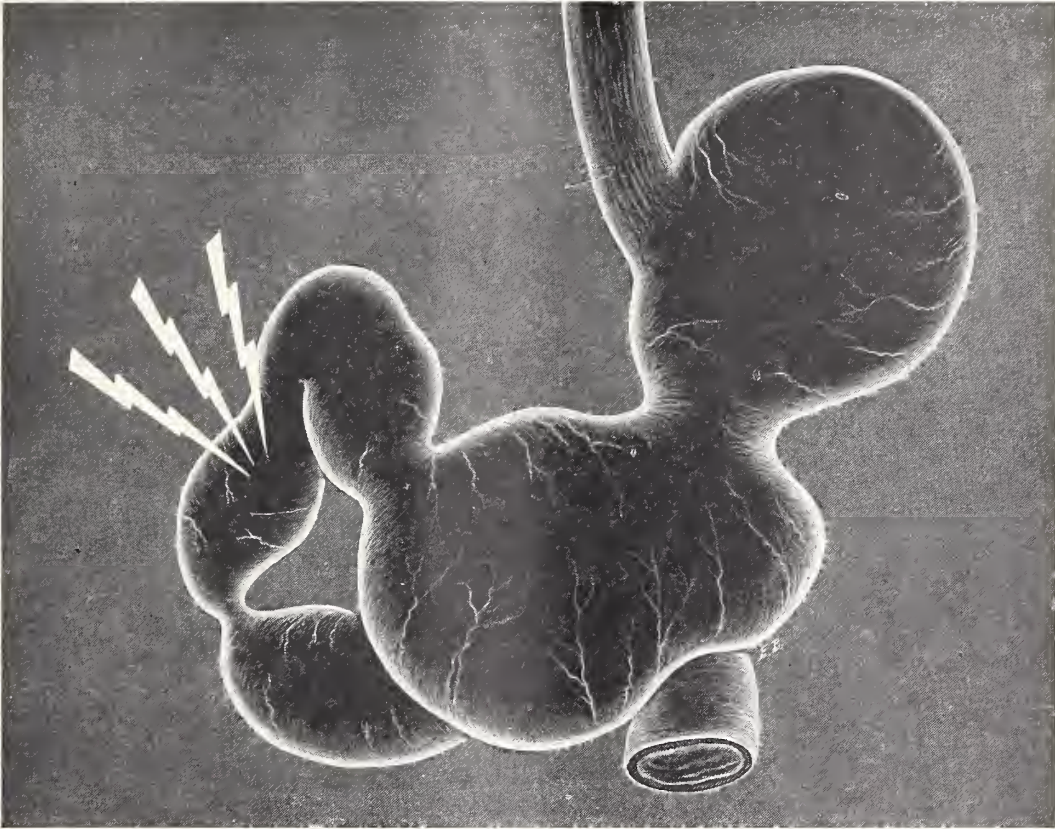
The earliest time for such a procedure is limited only by the physician's capability and facilities for the care of premature infants without increased mortality. Since the early prediction of hepatic failure is not absolute, it is easy to see that the fetus will be exposed unnecessarily to the hazards of prematurity in cases that may have had a benign course. If one waits to predict hepatic failure with certainty, it is then too late to carry out interruptive procedures without danger to the mother. The other possible course is that of expectant waiting to see if the patient will improve without developing massive hepatitis. In this way, the fetus is not endangered by prematurity and there is no risk of inducing further hepatic damage secondary to the interruption of pregnancy.

Opinion is divided as to which of these is the better course to follow. Both methods of management are good, and it will be a matter of individual difference in each patient as to which course should be followed. Should the latter course be followed and hepatic failure develop, management will be for hepatic failure as described previously. Delivery in this event should not be artificially induced but should be effected spontaneously. If hepatitis is too severe for the continuance of pregnancy, the patient will abort or deliver prematurely. Otherwise the patient will recover from the hepatitis and delivery can then be effected when the patient has sufficiently recovered. The problem thereby resolves itself.

In the delivery, general anesthetics are to be avoided as local infiltration is the anesthetic of choice. Uterine contractions are exceptionally painless in severe hepatitis, and little anesthesia is therefore required.² Prolonged bleeding is to be expected in the third stage of labor and during the first 24 to 48 hours postpartum. This bleeding may be adequately controlled by firm uterine contractions in the immediate puerperium; but later, when the uterus relaxes, delayed bleeding occurs because of a failure of the clotting mechanism in the uterine sinuses. Such bleeding is not amenable to vitamin K therapy, and Reid⁴⁷ believes the defect is due to decreased production of fibrinogen by the liver. The use of uterine tamponade or fibrinogen infusions may therefore be lifesaving.

In cases of mild hepatitis, it is still of value to give the patient therapeutic doses of vitamin K in the hope of preventing excessive blood loss. Blood loss in hepatitis is tolerated poorly and should be replaced immediately and completely. Adequate preparations should be made prior to the delivery for control of hemorrhage and immediate replacement of blood loss. Since the infectious agent is present in the mother's stools, special care must be exercised to prevent contamination of the newborn with the mother's

PRO-BANTHINE FOR ANTICHOLINERGIC ACTION



Abnormal Motility as the Cause of Ulcer Pain

Until recently the general opinion was held that ulcer pain was primarily caused by the presence of hydrochloric acid on the surface of the ulcer.

Present investigations^{1,2} on the relationship of acidity and muscular activity to ulcer pain have led to the following concept of its etiologic factor:

"... abnormal motility² is the fundamental mechanism through which ulcer pain is produced. For the production and perception of ulcer pain there must be, one, a stimulus, HCl or others less well understood; two, an intact motor nerve supply to the stomach and duodenum; three, altered gastro-duodenal motility; and four, an intact sensory pathway to the cerebral cortex."

Pro-Banthine[®] has been demonstrated consistently to reduce hypermotility of the stomach and intestinal tract and in most instances also to reduce gastric acid-

ity. Dramatic remissions¹ in peptic ulcer have followed Pro-Banthine therapy. These remissions (or possible cures) were established not only on the basis of the disappearance of pain and increased subjective well-being but also on roentgenologic evidence.

Pro-Banthine Bromide (Beta-diisopropylaminoethyl xanthene-9-carboxylate methobromide, brand of propantheline bromide) has other fields of usefulness, particularly in those in which vagotonia or parasympathotonia is present. These conditions include hypermotility of the large and small bowel, certain forms of pylorospasm, pancreatitis and ureteral and bladder spasm.

1. Schwartz, I. R.; Lehman, E.; Ostrove, R., and Seibel, J. M.: A Clinical Evaluation of a New Anticholinergic Drug, Pro-Banthine, *Gastroenterology* 25:416 (Nov.) 1953.

2. Ruffin, J. M.; Baylin, G. J.; Legerton, C. W., Jr., and Texter, E. C., Jr.: Mechanism of Pain in Peptic Ulcer, *Gastroenterology* 23:252 (Feb.) 1953.

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feces during the delivery. Management of the puerperium should receive added attention directed towards the hepatitis, following the principles of management previously mentioned.

What possible effect, if any, does maternal hepatitis have upon the developing embryo? A brief review of the known facts of teratology will help clarify the question. Developmental anomalies occur as a result of inherent germ plasm defects in the genes as inherited characteristics, or as a result of adverse conditions affecting the embryo. The latter consist of mechanical, actinic, endocrine, dietetic, and infectious factors.

Purely mechanical factors produce congenital defects such as occur in abdominal and tubal pregnancies and in abnormal uteri.^{27, 58} Radiation of maternal experimental animals and man has resulted in gross developmental defects of the newborn.^{55, 58} Maternal diabetes is associated with increased fetal and neonatal mortality, macrosomia, and an increased incidence of congenital malformations.⁵² That elevated blood sugar is not the definitive factor in the causation of these findings is illustrated by the fact that the prediabetic mother, whose blood sugar is normal at the time of delivery but who will later become diabetic, will exhibit the same incidence of fetal mortality, malformation, and macrosomia.⁵²

Warkany⁶⁰ showed that dietary deficiencies of severe degree ended in termination of the pregnancy, and relative deficiencies were of importance in the production of abnormal offspring. Maternal rats maintained on vitamin A deficient diets gave birth to progeny with a fibrous retrolenticular membrane replacing the vitreous. Riboflavin and vitamin D deficiencies produced specific skeletal defects in the progeny of maternal rats.⁶⁰ In man, beriberi is an example of maternal vitamin deficiency being transmitted to the infant.⁵² Maternal infectious diseases exerting teratogenic effects upon the developing embryo were reported by Gregg^{52, 62} in 1941, when he noted an unusually large number of congenital cataracts associated with congenital heart disease following an epidemic of maternal rubella in Australia.

These adverse factors that exert a teratogenic influence upon the fetus must exert their effect during the organogenetic period of gestation. The first eight weeks of gestation, when the velocity of cell reproduction is the greatest, is that period in which the embryo is most susceptible to cellular dysplasia.⁵⁶ It is possible that abnormalities may result as late as the 12th to the 14th week of gestation, although this less frequently occurs.

Stockard⁵⁹ demonstrated the importance of the time element of abnormal development. Using fish embryos, he demonstrated that different adverse conditions applied at the same phase of development tended to produce the same defects, whereas the same

conditions applied at different phases of development produced different defects. Using case reports of maternal rubella, it was subsequently shown, by correlating the type of defect with the time of the maternal infection, that the critical period for developmental defects of the heart is the fourth to the ninth week, the lens the fifth to the eighth week, and the cochlea the seventh to the 12th week.⁵⁶

Viral diseases other than rubella have been incriminated as exerting an effect upon the fetus in utero. Such an influence would occur as a result of placental permeability affording an avenue of infection.²⁷ Placental permeability is a consequence of: (1) the type of placenta concerned, a circumstance which varies with different species of animals; (2) the stage of pregnancy; (3) the size and weight of the substance in question; and (4) the selective activity which the placenta exerts in regard to certain substances.

Drugs such as penicillin, streptomycin, and morphine pass the placenta and can be demonstrated in the amniotic fluid and fetal blood. Vitamin C demonstrates the selectivity of the placenta, the concentration in the umbilical vein being several times greater than that of the maternal circulation.⁵² Antitoxins, bacteriolysins, precipitins, and complement-fixing antibodies pass the placental barrier. Antibodies to influenza A, poliomyelitis, diphtheria, and mumps are transmitted from the mother to the child without significant decrease in titer.

Smallpox, variola, and varicella have been demonstrated as capable of infecting the fetus in utero.⁵² There are recorded circumstances of infants born exhibiting characteristic lesions of the specific disease or developing the clinical picture of the disease within several days after birth. The period between birth and the clinical appearance of the disease is too short an interval of time to account for postpartum infection. Although these diseases can unquestionably infect the fetus in utero, resulting in stillbirth and abortion, there is no definite evidence available to prove any teratogenic effect upon the fetus.

Mumps, infectious mononucleosis, and herpes zoster are other diseases reported as possessing questionable teratogenic qualities. Case reports of fetal abnormality associated with these diseases have been recorded, but such cases are few in number, and no comparison is made of the incidence of the disease without fetal complications.

The question of whether or not the virus of infectious hepatitis possesses a teratogenic influence is likewise unsettled. There are case reports of fetal abnormalities associated with maternal infectious hepatitis. However, there is no proof that these abnormalities are a direct result of the virus infection and are not a result of chance coincidence associated with the infection. If the virus is to be incriminated as

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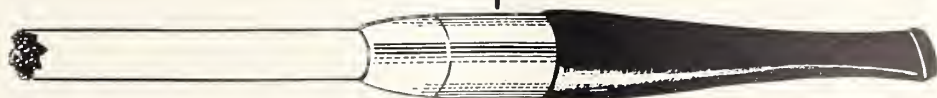
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having a teratogenic influence, such influence must be exerted during the first trimester. Otherwise, the principles of teratology are violated.

Of 40 cases of reported maternal hepatitis^{6, 40, 50, 51, 53, 54, 57} and three cases at this center, in which the trimester of infection and the result of pregnancy are known, only two cases were complicated by congenital defects. In one case in which hepatitis occurred one month prior to and persisted throughout pregnancy, the result of gestation was a composite monster.⁴⁰ Infection occurred in the other case during the late second and early third trimesters and resulted in a hydrocephalic infant with microphthalmos.⁵⁴ There are three other cases in which hepatitis occurred in the first trimester.⁵⁰ One of these resulted in a normal term birth, and the other two resulted in spontaneous abortions.

These five cases illustrate several facts. Infectious hepatitis in the first trimester may result in spontaneous abortion, as shown by two cases. Fetal abnormality following hepatitis in the late second and early third trimesters cannot be accepted as the consequence of maternal hepatitis as this case does not satisfy the principles of teratology. This demonstrates chance coincidence of abnormality associated with but not a direct result of maternal hepatitis. Fetal abnormality in the one case of hepatitis complicating the first trimester may be the direct result of the virus of infectious hepatitis. This case satisfies the principles of teratology. The last case, a normal term birth following first trimester maternal hepatitis, demonstrates that even though such an influence may be exerted by the virus of infectious hepatitis, not every fetus will be so affected.

Since the question is unsettled, there is only one definite position that the physician may take regarding infectious hepatitis in the first trimester—that therapeutic abortion to prevent the birth of a congenitally malformed fetus is not to be practiced. Proof of a teratogenic influence is lacking. Even though such proof were available, normal fetuses would be sacrificed if therapeutic abortion were practiced, for not all cases of maternal hepatitis result in congenital malformations. Therefore, the question of management of the patient with first trimester hepatitis solves itself.

CONCLUSIONS

Infectious hepatitis is not a disease process peculiar to pregnancy. It is an infectious process complicating pregnancy, and interest is centered about the hepatitis.

Early diagnosis is difficult. Symptoms of the preicteric stage are misinterpreted as common phenomena of pregnancy. When icterus appears the diagnosis becomes easier. The differential diagnosis is the same as in the non-pregnant individual. Gamma globulin

given prophylactically prior to the onset of symptoms prevents development of the disease.

Maternal and fetal prognosis is good when hepatitis is mild and grave when hepatitis is severe. Severe hepatitis occurs most frequently in the third trimester and progresses to acute yellow atrophy when treatment is not instituted promptly.

Treatment is directed toward hepatitis and consists of complete bed rest, adequate nutrition, and avoidance of hepatotoxic agents. Delivery should be accomplished by the simplest, easiest, and least disturbing method to maternal physiology.

Spontaneous abortion and premature delivery are frequent with hepatitis of moderate severity. A still-born, macerated fetus is frequently encountered in acute yellow atrophy.

The question of a teratogenic influence exerted by the virus of infectious hepatitis is unsettled. Such an influence is possible, though sufficient evidence is not available to support a definite conclusion.

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THE KANSAS PRESS LOOKS AT MEDICINE

Editor's Note. In this section the JOURNAL reproduces editorials relating to medicine which have appeared in the lay press. An effort is made to include both favorable and unfavorable comments, and the Editorial Board in no instance assumes responsibility for the opinions expressed.

COST OF MEDICAL CARE

Human nature being what it is, people will complain about paying a comparatively modest sum for something they don't enjoy but must have—and will cheerfully spend much more for something they want, but don't urgently need.

The cost of medical care is a case in point. True, there are individual cases where serious trouble strikes a family and it seems hard-earned savings have to be spent because of prolonged sickness. However, at intervals there is bitter criticism of the bills charged by doctors and hospitals and pharmacists. An uninformed person might conclude that these costs generally are one of the biggest budget problems in the life of the average American.

A writer for the *Industrial News Review* says it isn't so and cites a brief pictorial chart in the June issue of *Medical Economics*, based on Department of Commerce estimates, to prove it. The figures show—

Each year we spend \$1,600,000,000 for drugs—and \$2,600,000,000 for items involved in personal care, such as cosmetics, lotions and toilet waters.

Each year we spend \$2,600,000,000 in hospitals—and nearly twice as much, \$5,300,000,000 for tobacco.

Each year we spend \$2,800,000,000 for physicians' services—and well over three times as much, \$8,800,000,000 for alcoholic drinks.

Each year we spend \$2,900,000,000 for health care other than mentioned above—and over four times as much, \$11,900,000,000 on recreation.

The fact that we have more fun smoking or drinking or playing and watching games than in visiting the doctor or the hospital should not be allowed to warp our attitude toward the facts.—*Emporia Gazette*, July 13, 1955.

STUDY OF FREE MEDICAL CARE

A survey conducted by the New Hampshire Medical Society recently and reported to the A.M.A. disclosed that some person in that state gets \$4.00 worth of free medical care every minute. The society placed the annual value of this care at \$2,096,640 a year, \$40,320 a week, or \$5,760 a day.

"Just about every practicing physician does some charity work," the report stated. "The scope depends upon the doctor's geographical location, the economic status of patients in his area, and the type of professional service rendered."

On the basis of its present active membership, the society credits the average doctor in the state with providing \$3,425 worth of free medical care a year—slightly more than \$65 weekly. For surgeons and other specialists the free care, measured in terms of dollars and cents, would be substantially greater.

NEW EDITION OF INFANT CARE

A new edition of *Infant Care*, the tenth revision since the publication for parents was first issued by the Children's Bureau, Social Security Administration, in 1914, came off the press last month.

A new section on the care of premature babies has been added, and increased emphasis is given to the need for precautions against accidents, the greatest single killer of children.

Like its predecessors, this edition attempts to bring together the best known and most widely accepted ideas of ways to keep babies physically healthy during their first year of life. A four-member Children's Bureau Pediatric Advisory Committee supervised publication.

The booklet is offered for sale by the Superintendent of Documents, Government Printing Office, Washington, D. C., at 15 cents a copy.



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REPORT OF A.M.A. DELEGATE

Your delegates spent two and a half days in meetings during the annual session of the A.M.A. in Atlantic City, June 5-7, 1955. More than 80 resolutions and reports were received, referred to 13 reference committees, and finally acted upon by the entire House of Delegates.

DRUG STORE OWNERSHIP

The resolution from the Kansas delegates relating to this subject was thrown into the hopper, and the result was very satisfactory. It is, therefore, no longer unethical so long as the best interests of the patients are served and no proselyting is practiced.

HOSPITAL ACCREDITATION

The inflexibility of the standards set by the Joint Committee of Accreditation was fully discussed, there being several instances of what appeared to be resulting inequities. This simmered down to a few basic principles:

1. It is difficult to get trained examiners. Those who pass on the efficiency of the care of patients in various hospitals are physicians. These doctors also check staff organizations.
2. No hospital is accredited which has cultists caring for patients therein.
3. There is now a system of appeal whereby any hospital may show changes in proficiency entitling it to file for accreditation.

It is evident from the verbal report of the secretary of the Council on Medical Education and Hospitals that ignorance of the full operation of the system, on the one hand, and failure of many institutions to meet minimum standards, on the other, were the chief difficulties.

It became our opinion that the aggrieved institutions were as much or more at fault as the system of appraisal which doctors of medicine have developed.

It is true that the American Hospital Association appears at times to want to monopolize the program. We do not believe this to be either true or possible. It is still and should remain a cooperative effort in furnishing adequate care to our patients.

OSTEOPATHY

The so-called Cline Committee 25-page report had been received and studied by your delegates prior to the meeting. We of Kansas thought that it contained many ambiguities, generalities, and weaknesses, to the extent of being almost self-contradictory in describing osteopathic education in five of the six schools extant.

The delegation from Kansas was composed of Doctors Pyle, Eddy, Gsell, and Nelson, plus the valuable assistance of Mr. Rueben M. Dalbec, executive assistant of the Kansas Medical Society, and Mr.

H. Martin Baker, executive secretary of the Sedgwick County Medical Society. We held a council each morning at breakfast and outlined the day's activities such as delegation rooms to visit, luncheons to attend, and reference committee meetings which needed our attention.

Because of the directive given us by the House of Delegates of the Kansas Medical Society, we naturally concentrated on osteopathy. This was done with such intensity that objective reporting may be difficult.

The Cline report consisted of 25 typed pages prepared and signed by all the members of that committee and three medical school deans as advisors. The Kansas delegation individually and collectively studied this carefully. I believe the consensus of the group was that it contained many ambiguities, generalities, and self-contradictory statements. We selected the weaknesses which in general were these:

1. Throughout, the report indicated that none of the five osteopathic colleges met even the lowest minimum standards of medical education set up by our Council on Medical Education and Hospitals.

2. The osteopathic association has never publicly renounced the osteopathic (skeletal lesion) theory of disease or discontinued placing it in catalogues.

3. The osteopathic colleges and association have not officially asked the American Medical Association for help.

4. Practice rights problems belong to our several states and are not the concern of our national organization.

In various hospitality rooms, before the committee, and before the full House of Delegates, the Kansas delegation worked. The result was the acceptance of the committee minority report prepared by Dr. Milford O. Rouse of Dallas. I quote it verbatim:

MINORITY REPORT OF REFERENCE COMMITTEE ON MEDICAL EDUCATION AND HOSPITALS

Concerning report of Committee on Relations between Osteopathy and Medicine: One member of the Reference Committee was completely satisfied that an appreciable portion of current education in colleges of osteopathy definitely does constitute the teaching of "cultist" healing, and is an index that the "osteopathic concept" still persists in current osteopathic practice. Since he cannot with conscience approve the recommendation that doctors of medicine teach in osteopathic colleges where "cultism" is part of the curriculum, he respectfully makes the following recommendations to the House of Delegates:

1. That the report of the Committee for the Study of Relations between Osteopathy and Medicine be received and filed; and that the committee be thanked for its diligent work, and be discontinued.

2. That if and when the House of Delegates of the American Osteopathic Association, their official

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Bumbalo, T. S., Gustina, F. J.,
and Oleksiak, R. E.:
J. Pediat. 44:386, 1954.

White, R. H. R., and
Standen, O. D.:
Brit. M. J. 2:755, 1953.

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Brown, H. W.:
J. Pediat. 45:419, 1954.

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policy-making body, may voluntarily abandon the commonly so-called "osteopathic concept," with proper deletion of said "osteopathic concept" from catalogues of their colleges; and may approach the Trustees of the American Medical Association with a request for further discussion of the relations of Osteopathy and Medicine, the said Trustees shall appoint another special committee for such discussion.

Respectfully submitted,
Milford O. Rouse, M.D.

QUOTATION FROM OATH OF HIPPOCRATES

"... and that by precept, lecture and every other mode of instruction I will impart a knowledge of the Art to my own sons and to those of my teachers, and to disciples bound by the stipulation and oath, **ACCORDING TO THE LAW OF MEDICINE, BUT TO NONE OTHER.**"

To this delegate it seems a pity that we must spend so much effort negatively. There are positive efforts which could and probably should receive as much concerted effort: locally, the curtailment of other cultist healers who dispense such an inadequate brand of care to the unsuspecting public; nationally, ways and means to reduce the appalling automobile death rate; internationally, to further lower scientific medical barriers in the furtherance of world peace. These and many other positive efforts would seem more appropriate for the dignity and ethics of organized medicine.

Signed,
L. S. Nelson, M.D.
Senior Delegate from Kansas

SIMPLIFIED INSURANCE FORMS

Approval has been granted by the A.M.A.'s Council on Medical Service to five new simplified insurance claim forms drawn up by a special committee of the Health Insurance Council. The committee worked in collaboration with the Committee on Prepayment Medical and Hospital Service and included representation from all types of private insurance carriers. One simplified insurance claim form had previously been approved.

The additional claim forms may be identified by the following symbols and titles: ID-1, Attending Physician's Statement, Accident or Sickness (individual insurance); IDS-1, Attending Physician's Supplementary Statement (individual insurance); GD-1, Attending Physician's Statement (group insurance); GDS-1, Attending Physician's Supplementary Statement (group insurance); IPHS-1, Attending Physician's Statement, Accident or Sickness (individual hospital or surgical).

These five forms, together with GS-1 (group sur-

gical expense, approved in 1954), are, in essence, adaptations of two basic forms—one designed for groups and the other for insurance underwritten on an individual or non-group basis.

The work has been done in the hope that insurance companies identified with the Health Insurance Council will use the forms in their day-to-day claims administration and that physicians throughout the country will co-operate by completing the simplified forms promptly to facilitate the administration of claims.

Three out of four traffic accidents involve passenger cars.

DEATH NOTICES

ROBERT Y. JONES, M.D.

Dr. R. Y. Jones, 73, an honorary member of the Reno County Society, died in Hutchinson on July 3 after an illness of two months. He had been in retirement since 1953. Dr. Jones was graduated from Rush Medical College in 1907, practiced two years in Chicago, and then opened an office in Hutchinson, specializing in surgery.

WENDELL MAURICE TATE, M.D.

Dr. W. M. Tate, 49, Peabody, died on July 12 in Axtell Hospital, Newton, after having suffered a heart attack two hours before. He was a member of the Marion County Medical Society. Dr. Tate was graduated from the University of Kansas School of Medicine in 1933 and served his internship at the Hertzler Clinic and Hospital in Halstead. He began practice in Peabody in 1935 and continued to practice there until his death.

AGNES LOUISE ROBBINS, M.D.

Dr. Agnes Robbins, 46, a member of the Wyandotte County Society, died at Bethany Hospital in Kansas City on July 15. She had been ill for some time. A graduate of the University of Kansas School of Medicine with the class of 1945, Dr. Robbins served her internship at St. Margaret's Hospital in Kansas City. She then opened offices in Kansas City and in Bethel. She was an active member of the American Academy of General Practice.

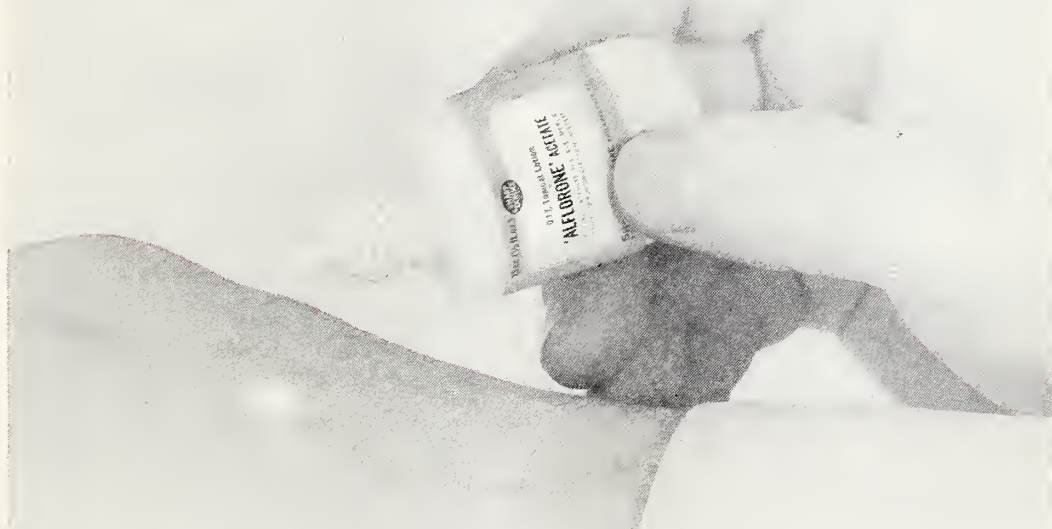
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THE MONTH IN WASHINGTON

Editor's Note. The following summary of Washington news was prepared by the Washington office of the A.M.A. for distribution to state and regional medical journals.

For more than a year the administration has been attempting to work out a system of voluntary, contributory health insurance for Uncle Sam's two million or so civilian employees and their families. It would seem a simple thing to arrange, considering that most big employers have had similar plans in operation for years. At any rate, the plan is ready now for Congress to act on, but putting it together hasn't been easy.

First, there was the question of how to fit in the many already existing health insurance plans (some conducted by U. S. employee unions), and at the same time to offer coverage to government people working and living where no adequate insurance is being offered.

Also, there was wide disagreement as to how much of the premium the federal government should pay; in private industry, employers' contributions range from a small percentage to the entire cost. U. S. employee unions naturally thought the federal government should set an example in generosity.

The program was first outlined early in the year. It then was put on the shelf for two reasons: a few refinements had to be made, and Congress first had to decide how big a pay raise it was going to allow U. S. workers this year before thinking about a fringe benefit, such as health insurance. The whole program was sent to the House and Senate just at the start of the adjournment rush, with the realization that not much could be hoped for this session.

The plan offers U. S. employees the option of signing up with a local non-profit service or indemnity plan, providing 75 per cent of the workers in the particular operation vote for a particular plan and providing that plan is approved by the U. S. Civil Service Commission. If the employees can't get together, or if no adequate plan is available locally, they can sign up for a uniform national indemnity plan to be underwritten by one or more large national insurance companies and negotiated by the Civil Service Commission. The proposed law itself lists specifically the original benefits that must be provided by the uniform plan, but authorizes the Commission to readjust them.

Regardless of which type coverage the employee selects for himself and his family, the federal contribution would be figured the same way. It could not

exceed one-third of the total premium, or \$19.50 annually for a single person or \$52 for one with dependents, whichever figure is the lesser. If the uniform plan is chosen, the single employee could not be charged more than \$39 annually, or the one with dependents more than \$108 annually. But under any other plan, the employee would pay the difference between the U. S. contribution and the premium cost.

A system of major medical cost or catastrophic insurance also would be provided. Under it the employee would have to pay the first \$100 of cost, after benefits of the basic policy had been exhausted, before major medical cost benefits would become available. From that point on, until \$10,000 had been paid by the company, the employee would have to pay only 25 per cent.

The first major medical bill enacted was the extension for another two years of the doctor draft act, which for five years has been furnishing the armed forces and the Public Health Service with most of their doctors. Before passage, two changes were made in the law. The maximum age for induction was dropped five years. Under the old law a man could not be taken against his wishes after he had reached his 51st birthday; the new law reduced it to his 46th birthday. Also, the law no longer applies to physicians and dentists who have reached their 35th birthdays and who have been rejected for a medical or dental commission at any time solely on the grounds of physical condition.

Defense Department points out that the man has to be able to demonstrate that he actually applied for a medical or dental commission and was rejected; a 4-F draft board classification is not sufficient. The department also said that the law will not result in the discharge of men already in uniform, even though they could not be inducted under the new law.

As adjournment approached, prospects were that not much more medical legislation would be enacted this session. Most likely of success was a proposal for U. S. grants to states to help finance Salk vaccine costs; the states would decide the priority of age groups, but in a public program there could be no "means test" to determine whether a family could afford to pay. Under this plan the states would receive a certain amount as a straight grant, based on the state's economic need and the number of unimmunized children. If they wanted to put up dollar-for-dollar, the states also could draw on a second account. The bill does not set any limit on U. S. appropriations.

Two other possibilities were bills for a national survey of mental illness (which passed the House early in the session) and for U. S. grants to medical schools.

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And beat him she did—in just over 72 days—with only one dangerous incident. A “titled cad” tried to flirt with her in the middle of the Indian Ocean, but even he subsided when she threatened to signal the nearest U. S. man-of-war.

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ACTIVITIES OF MEMBERS

Dr. Ray T. Parmley, Wichita, is the author of a book, *Saddle Block Anesthesia*, published last month by Charles C Thomas, Springfield, Illinois.

Dr. Dennis Hardman, in the Navy for the past two years, has received his discharge and resumed his practice in Smith Center on July 1.

Dr. Clarence E. Thompson, Holyrood, is the sponsor of a "Sane Driving" contest for Holyrood youths between the ages of 15 and 21.

Dr. George J. Mastio, Jr., who has practiced in Ulysses for two years, closed his office there late in June and went to Kansas City to begin a residency in surgery at the University of Kansas Medical Center.

Dr. Hugh J. Woods, Smith Center, has gone to Kansas City for a year's postgraduate work in internal medicine at the University of Kansas Medical Center.

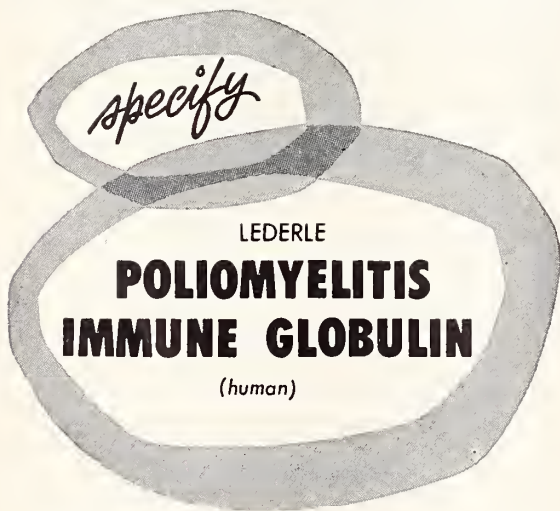
Dr. George L. Thorpe, Wichita, was elected vice-

chairman of the Section on General Practice of the American Medical Association at the annual meeting in Atlantic City, June 11. Dr. Thorpe will become chairman of the section at the close of the annual meeting of the A.M.A. in Chicago, June 1956, and will preside at the meetings of the Section on General Practice and give the chairman's address at the A.M.A. meeting in Boston in June 1957.

Feature stories about Dr. J. W. McGuire, who has completed 50 years in practice, were published in June issues of the *Neodesha Register* and *Neodesha Daily Sun*. Dr. C. C. Dennie, Kansas City, Dr. James Butin, Chanute, and Dr. Lynn Beal, Fredonia, were among the speakers at an anniversary dinner in Dr. McGuire's honor.

Dr. Charles P. McCoy, Wichita, is taking a two-year postgraduate course in obstetrics and gynecology in St. Louis. He plans to return to Wichita later to practice in association with Dr. J. G. Kendrick and Dr. F. F. Nyberg.

Dr. George E. Burket and Dr. Sam Zweifel, Jr., Kingman, announce that Dr. Charles H. Finney, a 1954 graduate of the University of Kansas School of Medicine, is now associated with them in practice.



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Dr. Finney recently completed his internship at Sacred Heart Hospital, Eugene, Oregon.

Dr. Ernest C. Brandsted, McPherson, recently became a diplomate of the American Board of Obstetrics and Gynecology.

Dr. Robert L. Newman, of the University of Kansas Medical Center, spoke on "Ovarian Tumors" at a recent meeting of the Wichita Obstetrical and Gynecological Society.

Dr. Lawrence E. Filkin, who has been practicing in Concordia since 1946, became a member of the staff of the Gelvin-Haughey Clinic in Concordia recently. He specializes in obstetrics.

Dr. Paul M. Powell, Topeka, has announced that his son, Dr. Benson M. Powell, is now associated with him in practice. The younger Dr. Powell will limit his practice to surgery, specializing in thoracic surgery.

Dr. Clinton C. Fuller, Columbus, announces that Dr. Forrest Jones is now associated with him in prac-

tice. Dr. Jones, a graduate of the University of Kansas School of Medicine, recently completed his internship at St. Francis Hospital, Wichita.

Dr. Katherine Pennington recently completed a course in pediatric cardiology at Johns Hopkins Hospital, Baltimore, and has returned to her practice in Wichita.

Dr. Karl Menninger, Topeka, and Dr. W. Clarke Wescoe, dean of the University of Kansas School of Medicine, are now serving as members of a committee appointed by Governor Fred Hall to advise on matters affecting penal and correctional institutions in Kansas.

Three physicians were recently appointed by Governor Fred Hall to four-year terms on the Advisory Commission for the Norton Tuberculosis Sanatorium, Dr. H. Preston Palmer of Scott City, Dr. J. Lloyd Morgan of Emporia, and Dr. Robert M. Brooker of Topeka.

The El Dorado Clinic announces that Dr. Ben E. White is now a member of its staff. Dr. White, a graduate of the University of Kansas School of Medi-

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cine, recently completed internship at St. Margaret's Hospital, Kansas City.

Dr. Franklin D. Murphy, chancellor of the University of Kansas, delivered the commencement address at graduation exercises at the University of Pennsylvania Medical School in June.

Dr. LaRue W. Owen, who recently completed a residency in anesthesiology at Harvard Medical School, has returned to Wichita and is now practicing there.

Dr. Lee S. Fent, who recently completed a tour of duty with the Army at Fort Leavenworth, has returned to his practice in Newton.

Dr. William E. Mowery, a surgeon, and Dr. Robert D. Lindeman, who will specialize in obstetrics, have joined the staff of the Mowery Clinic in Salina. The clinic was founded by Dr. Mowery's father, the late Dr. W. E. Mowery.

The Bethel Clinic, Newton, announces that Dr. Francis N. Lohrenz, an internist, is now a member of its staff. Dr. Lohrenz was graduated from Vander-

bilt University Medical School in 1949 and completed his training, internship and residency, at the University of Kansas Medical Center.

A feature story about Dr. Albert N. Gray, who recently celebrated his 85th birthday, was published in the *Burlington Daily Republican* on July 1. Dr. Gray has practiced for 47 years and has begun his 38th year in the Burlington community.

Dr. Arnold Greenhouse, a graduate of the University of Kansas School of Medicine, has joined the staff of the Dodge City Medical Center. Dr. Greenhouse has been a resident in internal medicine at the University of Kansas Medical Center during the past three years.

Announcement has been made of the appointment of the following new health officers: Dr. Melvin H. Waldorf, Jr., Greensburg, for Kiowa County; Dr. Carroll D. Behrhorst, Winfield, and Dr. Roscoe F. Morton, Arkansas City, for Cowley County, and Dr. J. D. Smith, Satanta, for Haskell County.

Dr. Albert W. Schmidt, who has been limiting his practice in Lyons to two hours a day in recent years,

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has announced his full retirement. He plans to spend the remainder of the summer in Colorado.

The Chamber of Commerce in Lincoln is making plans for a ceremony to be held in September to honor Dr. L. A. Kerr, who recently retired after 50 years of service to the Lincoln community.

Dr. Harlan W. Berthelsen, who formerly practiced in Sedan, is now located in McPherson. He is occupying offices formerly maintained by Dr. Robert P. Watterson, who recently moved to Arizona.

Dr. M. H. Waldorf, Jr., Greensburg, announces that Dr. Robert Fenton is now associated with the Bradley-Waldorf clinic there. Dr. Fenton is a graduate of the University of Kansas School of Medicine.

Dr. John F. Montague, who has been practicing in St. Marys, closed his office on August 1 to begin a residency in orthopedic surgery at Franklin Hospital, San Francisco.

The Nelson Clinic, Manhattan, announces the addition of Dr. Leonard A. Wall to its staff. Dr. Wall was graduated from the University of Okla-

homa Medical School in 1951 and served his internship at Wesley Hospital, Oklahoma City. Since 1952 he has been a resident in obstetrics and gynecology at the University of Kansas Medical Center.

FILM ON MEDICAL EDUCATION

"Danger at the Source" is the title of a new 13½-minute film produced recently by the National Fund for Medical Education. It tells the story of medical education in America, prepared as a public service by Fox Movietone and narrated by Ray Middleton.

Filmed in medical schools and teaching hospitals and supervised by medical educators, the picture highlights the glories and hard work of the American system of medical teaching. It is designed to emphasize the importance of the nation's 81 medical schools and the problems they face in accumulating the necessary funds to continue as a free and progressive force for the national welfare.

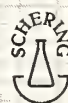
The National Fund for Medical Education, founded in 1949, has distributed nearly \$7 million in unrestricted grants to schools. The goal is \$10 million each year. The address of the fund is 2 West 46th Street, New York 36, New York.

The 1956 annual meeting of the Kansas Medical Society will be held in Topeka, April 29-May 3.

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BOOK REVIEWS

Obstetrics. Eleventh Edition. By J. P. Greenhill, M.D. Published by W. B. Saunders Company, Philadelphia. 1008 pages, 1170 illustrations. Price \$14.

The new edition of *Obstetrics* by Greenhill (formerly Dee Lee and Greenhill) is a complete revision of the old text which was out of date in many respects. The new book contains complete discussions of practically all facets of obstetrics and is well documented with references to the recent literature. The illustrations are excellent, and the type is easy to read. The style is lucid; discussions are detailed and specific enough to make the book a handy reference manual. It is at present the best general obstetrics textbook available.—E.W.J.P.

Pomp and Pestilence: Infectious Disease, Its Origins and Conquest. By Ronald Hare, M.D. Published by Philosophical Library, Inc., New York. 224 pages. Price \$5.75.

This excellent, readable little book should be read by everyone interested in the broader aspects of

bacteriology. The author, after a brief but interesting account of the origin of man and of parasites, discusses some of the best known pathogenic species and describes their life cycle, modes of infection, and the diseases they produce.

In Chapter Two the author considers the place of origin of many well-known infectious diseases and the methods by which they were scattered from their original focus. Chapter Three contains a most interesting history of smallpox, plague, typhus, cholera, and influenza. The author points out the role great epidemics have played in the history of nations, pointing out that, while the Romans were fighting the Germans on the borders of the empire, an epidemic of smallpox in Rome was playing havoc with the Roman population.

The chapter on plague is of extreme interest. The author points out again the impact of the plague of Justinian on history. He points out that so-called bacteriological warfare is not so modern since the Tartars in their war with the Genoese in the 14th century hurled into the city of Caffa the bodies of patients who had died of the plague.

The role of typhus is also portrayed most vividly. The author describes in considerable detail the epidemic of typhus fever in Ireland—the mass evictions by absentee landlords and large scale emigration. "There can be little doubt that typhus had much to



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do with the Anglophobia which still affects many of the citizens of the U. S. A."

Later chapters in this work describe the effectiveness of many public health measures later introduced. In the closing chapter, after discussing the inadequate food supply for the teeming millions in China, India, Indonesia, and Burma, the author makes the statement that, with improved sanitation and health measures, these people may be able to save their children from death from parasitic infection but be unable to save them from death from starvation. "The prospect for the future is therefore bleak in the extreme. But whatever is done or not done, parasites will be taking a hand in the proceedings. . . ."

This interesting little book should be read to be appreciated and re-read to be fully appreciated.—*R.H.M.*

RADIOISOTOPES POLICY OF AEC

The Atomic Energy Commission has made radioisotopes for all biomedical and agricultural research and research in medical therapy available to domestic users at 20 per cent of catalogue price, effective on July 1, 1955. Reduced prices heretofore available only for cancer research will be extended for other projects.

The plan was broadened for three reasons: (1)

radioisotopes have proven useful in study of other important human diseases; (2) the distinction between cancer research and fundamental studies in biology, biochemistry, and biophysics is not always clear; (3) stimulation of the use of radioisotopes in the life sciences is considered to be in the public interest.

Under the new policy, radioisotope users will make application to the Atomic Energy Commission, Division of Biology and Medicine. Investigators or institutions awarded the discount must agree to publish results of their research.

PUBLIC RELATIONS INSTITUTE

The 1955 Public Relations Institute sponsored by the A.M.A. will be held at the Drake Hotel, Chicago, August 31 and September 1. Medical society officers and personnel, public relations committee chairmen, and members of the Woman's Auxiliary to the A.M.A. are invited to attend.

Among topics to be considered are: grass roots activity in national legislation, basic public relations techniques, medical publicity in magazines, and the individual's role in communication. There will also be opportunities for exchange of ideas, discussion of future A.M.A. activities, and viewing of motion pictures.

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ANNOUNCEMENTS

The 1955 convention of the National Society for Crippled Children and Adults will be held at the Palmer House, Chicago, November 28-30.

The 33rd annual scientific and clinical session of the American Congress of Physical Medicine and Rehabilitation will be held August 28-September 2 at the Hotel Statler, Detroit. All sessions will be open to physicians in good standing with the A.M.A. Full information may be obtained from the secretary, 30 North Michigan Avenue, Chicago 2, Illinois.

The Southwestern Surgical Congress announces a change in dates for its seventh annual meeting, to be held in Kansas City, Missouri, at the Hotel Muehlebach. The new dates, one week earlier than those previously announced, are Monday, Tuesday, and Wednesday, September 5-7.

Dr. William P. Longmire, Los Angeles, Dr. Frederick L. Reichert, San Francisco, and Dr. J. Englebert Dunphy, Boston, will be guest speakers and will serve as moderators at panel discussions. Each day's program will also include a feature somewhat like a

cine clinic, one presented by St. Louis University School of Medicine, one by the University of Kansas School of Medicine, and the third by Washington University School of Medicine.

Non-members are invited to attend and may secure programs by writing Central Office, 207 Plaza Court Building, Oklahoma City 3, Oklahoma.

The American Urological Association offers an annual award of \$1,000 for essays on the result of some clinical or laboratory research in urology. First prize will be \$500, second prize \$300, and third prize \$200. Competition is limited to urologists who

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Historical Material Needed

In preparation for the observance of The Kansas Medical Society's centennial anniversary, members of the Committee on History are attempting to collect all material of historical interest. Physicians who can contribute information, records, etc., are urged to send such to

Committee on History
Kansas Medical Society
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have been graduated no more than 10 years and to men in training to become urologists.

Information may be secured from the secretary, 1120 North Charles Street, Baltimore. Essays must be in his hands before December 1, 1955.

Creighton University School of Medicine, together with the Nebraska State League for Nursing and the Nebraska Arthritis and Rheumatism Foundation, will sponsor a three-day institute on rehabilitation of neuromuscular diseases and rheumatic diseases at Creighton Memorial St. Joseph's Hospital, September 8-10. Programs may be secured from Harold N. Neu, M.D., Department of Rehabilitation, Creighton Memorial St. Joseph's Hospital, Omaha.

Postdoctoral fellowships ranging from \$4,000 to \$6,000 per year, tenable for one year with prospect of renewal, are being offered by the Arthritis and Rheumatism Foundation, 23 West 45th Street, New York 36, New York. Senior fellowships for more experienced investigators will carry awards of from \$6,000 to \$7,500 per year and are tenable for five years.

The 62nd annual convention of the Association of Military Surgeons of the United States will be held

at Hotel Statler, Washington, D. C., November 7-9, 1955. The association's offices are at Suite 718, New Medical Building, 1726 Eye Street, N.W., Washington.

The Council on Postgraduate Medical Education of the American College of Chest Physicians, in cooperation with its respective state chapters and the staffs and faculties of hospitals and medical schools of Chicago and New York, will sponsor two fall postgraduate courses on diseases of the chest. The first will be at Hotel Knickerbocker, Chicago, October 3-7, and the second will be at Park-Sheraton Hotel, New York, November 14-18. Tuition for each is \$75. Complete information may be secured from Executive Director, 112 East Chestnut Street, Chicago 11, Illinois.

The Eighth Annual Mid-West Cancer Conference, sponsored jointly by the Kansas Division of the American Cancer Society and the Committee on Control of Cancer, Kansas Medical Society, will be held at the Broadview Hotel, Wichita, March 22 and 23, 1956.

"Endocrinology and Metabolism" is the subject of the seventh annual postgraduate assembly of the

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Endocrine Society, to be held in Indianapolis, September 26-October 1, at Indiana University Medical Center. Information may be secured from Postgraduate Office, 1100 West Michigan, Indianapolis 7, Indiana.

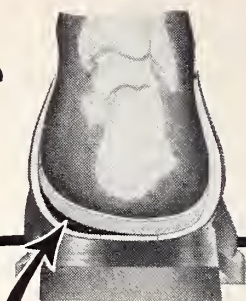
IMPORTANCE OF SMALL HOSPITALS

The hospital with 100 beds or less is the backbone of our nation's hospital care, reports Mr. Ray E. Brown, president-elect of the American Hospital Association. He bases that statement on the fact that of 5,212 general and short term hospitals, 3,533 are small institutions. They admit 5.5 million patients a year and record 836,500 births annually.

"Small hospitals face many problems in their efforts to fulfill their tremendous responsibility to the communities they serve," he said. "Even the smallest hospital today has to be a complete medical unit." He reported that even those of the smallest size must maintain most of the services found in large hospitals to keep pace with research and modern technology.

Records of the American Academy of General Practice show that 31 Kansas physicians attended the Academy's 1955 scientific assembly in Los Angeles.

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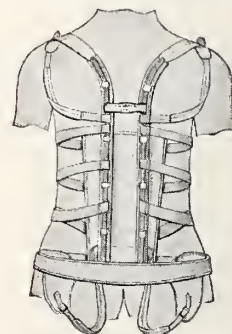
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SCHOOL FOR LIMB FITTERS

The first school in the country for training limb and brace fitters will be opened soon at the University of Buffalo School of Medicine. It will have a four-year curriculum and offer a bachelor of science degree. Until now, fitters have been trained by the apprenticeship method with no two apprentices undergoing the same training.

Since 1945 Congress has appropriated 10 million dollars to research in the field of rehabilitating amputees. A number of physicians, scientists, engineers, and prosthetists have devoted full time to the problem, and many schools are carrying on research programs of their own. The Department of Physical Medicine at the Buffalo school has already pioneered in the field by setting up research projects for amputee types considered unfit by others, the old, the very young, and those with multiple disabilities.

Heart disease is the "most formidable mountain" in medical research, in the opinion of Graydon L. Walker, vice-president of Parke, Davis and Company, who spoke to a group of druggists recently on important medical problems now to be solved. Heart disease, he reported, "is the Mount Everest on the graph which shows the range of mortality statistics.

"Each time we reach the summit in a successful fight to conquer a fatal disease, the patients who are saved become candidates in later years for heart disease, cancer, nutritional disorders, or one of the remaining uncontrolled infections—the mountains on our horizon."

History shows that tuberculosis is the product of incomplete civilization. It is a struggle in which civilized man is still at a biological disadvantage because imperfectly adapted to the new mode of life which he is creating or which is forced upon him. Tuberculosis is a social problem involving many factors other than the tubercle bacillus. It will be rapidly mastered only if society can be more perfectly fitted to human needs, limitations, and urges.—*Rene J. Dubos, Ph.D., NTA Transactions, May, 1954.*

Good health cannot be forced upon the public. We can, however, create an environment in which people will study their health needs and work out ways of doing what they want to do with what they have. This is true health education and the essence of democracy.—*Leroy E. Burney, M.D., Am. J. Pub. Health, Feb., 1955.*

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HOT WEATHER NUTRITIONAL TESTS

One hundred volunteer airmen began a two weeks' field test on July 6 to aid in the development of an improved global survival ration, according to a release from Headquarters Air Research and Development Command. The men subsisted on diets ranging from starvation to normal.

Half the men exercised heavily and the other half lightly. Further breakdowns were made on controlled amounts of drinking water and unlimited amounts to determine the effects of water on the airmen's well being. In all, 20 different feeding situations were studied, varying in caloric content and nutrient mixture in terms of fats, proteins, and carbohydrates. Physiological studies of the men were made for two weeks before the start of the test and were continued for two weeks afterward.

Basically, the 100 men were divided into four major groups.

Group I was permitted unlimited amounts of water, light exercise, and a predetermined amount of food, ranging from no food for some up to 3,000 calories for others.

Group II received the same rations of food and water as Group I, but the men were required to exercise heavily.

Group III received similar food rations, exercised

lightly, and received only limited amounts of water.

Group IV received food and water rations similar to Group III but exercised heavily.

The tests were conducted by the University of Illinois at Camp Atterbury, Indiana, with volunteers living in the field.

A cold weather field test was conducted last winter at Camp McCoy, Wisconsin. It demonstrated that a crashed airman's best chances for survival in cold climates depend on liberal quantities of drinking water and a ration made up of approximately 15 per cent protein, 52 per cent carbohydrate, and 33 per cent fat.

The decline in infectious disease, first of acute and more lately, and quite as conspicuously, of chronic illness, has led to longer life, larger populations, and a change in the main type of disease to which the existing population is subject. The additional persons and extra years mean at the same time greater needs for sustenance and more productivity in meeting them. Somewhere, unless the earth's resources are augmented in presently unknown ways in better provision of space and expanded food supply, an equalization must be attained in population additions and subtractions.—*Esmond R. Long, M.D., Bull. of the Hist. of Med., July-Aug., 1954.*

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Hypophysectomy in Metastatic Breast Carcinoma

REPORT OF A CASE

Philip W. Russell, M.D.
Wichita, Kansas

Currently, investigators in several medical centers are exploring the efficacy of hypophysectomy in metastatic breast carcinoma. This palliative procedure is an important step in clarifying theories of the hormonal-dependency of breast cancer. Therefore, further attention to hypophysectomy is warranted while it is still in the experimental phase of its development.

The use of hypophysectomy in patients with breast cancer was first described in this country by Olivecrona in November 1952.^{1a} His recent report includes the results obtained by hypophysectomy in 37 patients with metastatic breast cancer.^{1c} Hypophysectomy was incomplete in four patients, and three patients died of other diseases. Among 30 patients prior to June 1954, 13 patients survived from three to 28 months postoperatively. So far there have been few other preliminary reports of hypophysectomy for neoplastic disease.^{2, 3, 4, 5} Olivecrona felt that among the various malignancies for which he performed hypophysectomy, those of the breast offered the widest field for its application. His one patient with malignant chorionepithelioma deserves particular notice, however, for apparently complete ablation of tumor cells was demonstrated following removal of the pituitary gland.

The investigative experience with hypophysectomy in the human being is much greater than published reports indicate at this time. For example, the group at Sloan-Kettering Institute is studying the effects of

hypophysectomy in over 65 patients with breast carcinoma.⁶ Their results have been relatively encouraging and have excited premature comment in the lay press. However, until complete statistics are reported, the latest recommendation of the Council on Pharmacy and Chemistry of the American Medical Association is that both adrenalectomy and hypophysectomy are experimental procedures that should not be employed in breast carcinoma generally.⁷

The following detailed case report is offered as a basis for discussion.

CASE REPORT

A 35-year-old premenopausal woman was first examined at Wesley Hospital on January 15, 1954. She had had a right radical mastectomy for duct cell carcinoma in January 1951. Skeletal metastases had been present since June 1953 and intracranial metastases since October 1953. She had received narcotics daily for one month. For two weeks she had been incapacitated with continual right trigeminal neuralgia.

Physical examination revealed left proptosis with weakness of the right fifth, seventh, eighth, and left sixth cranial nerves, with severe diplopia. A pea-sized mass was present in the left breast.

Roentgenologic skeletal survey disclosed areas of bone destruction in the thoracic spine, lumbar spine, pelvis, and ribs. One pathologic rib fracture was present. A roentgenogram of the chest showed slight bilateral pulmonary infiltration.

Testosterone cyclopentylpropionate, 50 mg., was

From the Department of Internal Medicine, Wichita Clinic.

injected three times weekly between January 15 and March 24, 1954. Roentgen therapy began with 1500 r to the right middle cranial fossa between January 19 and January 25. The final menstrual period ended January 15. Between February 1 and February 9, she received 2400 r to the mid-pelvis; no further menstrual bleeding occurred. The lumbar spine and pelvis were treated with 2700 r between February 25 and February 28.

Subjective improvement began January 24. By March 1, there was 75 per cent improvement in the right eighth and left sixth cranial nerve symptoms, with complete remission in the right trigeminal neuralgia and left proptosis. However, the left breast lesion increased in size to 3 cm. She was discharged from the hospital on March 6. At home she continued to receive nursing care, daily narcotics, and testosterone.

The second hospitalization began March 25. The patient was bedfast with recurrence of the trigeminal neuralgia. Striking progression was demonstrable in the skin, left breast, lymph nodes, lungs, pericardium, clavicles, scapulae, ribs, pelvis, and the entire spine. Three pathologic fractures were present in the ribs and pelvis. Because large doses of narcotics could not relieve the trigeminal neuralgia, an intracranial procedure seemed advisable. Hypophysectomy was elected by the patient and her family after all palliative procedures were explained. Testosterone was discontinued. Cortisone acetate, 75 mg. intramuscularly daily, was begun on March 26.

Hypophysectomy was performed on March 30, 1954, by Dr. A. H. Bacon and Dr. J. P. Schweinfurth. A right frontal osteoplastic craniotomy was used. As an illustration of the extent of the metastases in this patient, it was noted that the periosteum and most of the dura mater overlying the frontal lobe were infiltrated by tumor cells. Even the pituitary gland contained carcinoma. All gross pituitary tissue was removed.

Postoperatively, there was an impressive lack of morbidity. No changes requiring correction of blood pressure or electrolyte balance occurred. The patient was euphoric, comfortable, eating, and walking within 48 hours after surgery. As euphoria disappeared, subjective improvement increased rapidly during a three-week period and continued to increase for two or three months. Trigeminal neuralgia never recurred. Some sciatic pain persisted, requiring narcotics, to which preoperative addiction had been evident. Frequent coughing, which had been present preoperatively, disappeared in two weeks.

Diabetes insipidus began on the second postoperative day; its control was not necessary until the tenth day, when the daily urine volume was 14 L. No oliguric phase occurred. No hypoglycemia occurred. Serial serum potassium levels were normal.

Neither calcium balance studies nor water excretion studies were done.

A 48-hour urine specimen collected April 24 showed absence of estrogen and gonadotropin.

Postoperative medical management depended on cortisone in divided doses of 75 to 100 mg. daily. During the first 60 hours, the patient received 5 L. of 10 per cent dextrose in distilled water, and 1 L. of 5 per cent dextrose in physiologic saline; thereafter no parenteral fluids were used. She received 4 grams of supplementary salt orally each day thereafter. Desiccated thyroid, $\frac{1}{4}$ grain, was given daily after April 13, although no evidence of myxedema was present at that time. Pitressin tannate in oil, 2.5 to 5 units, was injected regularly after April 10; attempts at withdrawal always induced excessive thirst and polyuria.

On discharge from the hospital May 8, 1954, the patient was remarkably self-sufficient. The duration of satisfactory regression was five and one-half months. Skeletal pain never disappeared entirely and required the use of narcotics; mild addiction remained. Nevertheless, for three months she did her own housework, cared for her pre-school child, and went shopping.

Objective improvement began with a change in cranial nerve signs two weeks after operation and was maximal during the fourth postoperative month. Objective improvement consisted of the following: (1) disappearance of five skin nodules, (2) a decrease in the left breast mass to one-fourth its original size, (3) decrease in lymphadenopathy, (4) disappearance of weakness of the left sixth and right seventh and eighth cranial nerves, (5) disappearance of proptosis, (6) weight gain of 28 pounds without edema, (7) obvious roentgenologic improvement in pulmonary infiltration, and (8) healing of the three pathologic fractures. Despite these changes, the existing bony metastases showed continual progression, and new osteolytic areas appeared.

The thyroidal uptake of radioactive iodine was 3 per cent on August 3.

On August 11, 1954, the patient was hospitalized for two days for definite acute adrenal insufficiency. This was caused by an attempt to lower the daily dose of cortisone below 62.5 mg. After 100 mg. of hydrocortisone intravenously, the previous maintenance dose of 62.5 mg. of cortisone proved sufficient.

On October 1, 1954, the patient developed intractable pain from a spinal cord lesion, and narcotic addiction became the major problem. Testosterone, 50 mg. three times weekly, was injected between September 20 and November 27, 1954. Roentgen therapy failed to give improvement. No cachexia was present. The patient expired on November 27, 1954, from pulmonary metastases.

Postmortem examination of the head was not permitted. All organs except the heart showed metastases from duct cell carcinoma. The thyroid gland was not removed. The adrenal glands, which contained metastases, showed atrophy and vacuolation of the zona fasciculata and zona reticularis. Fat stains demonstrated that these zones of the adrenal gland contained an increased amount of fat in small droplets.

COMMENT

Among several aspects of this case which deserve comment are: (1) the course of the patient prior to hypophysectomy, (2) the technic of operation and postoperative management, (3) the clinical evidence showing that hypophysectomy was complete, (4) the occurrence of diabetes insipidus, and (5) the appearance of the adrenal glands.

The preoperative treatment received by this patient consisted of roentgen therapy, roentgen castration, and testosterone. These were started practically simultaneously, as the patient was in a critical state. The initial control of trigeminal neuralgia was effected by roentgen therapy. The major preoperative remission, which began during the second week, started too soon to be attributed to androgen therapy. It was more characteristic of the response expected in 15 to 30 per cent of patients from castration.

It is of some interest that this patient had an apparent response to roentgen castration, as this implies that her tumor was of the so-called estrogen-dependent type at that particular time. The term "estrogen-dependent" is an arbitrary description applied to breast cancers in patients who exhibit any of the following: (1) response to premenopausal castration, (2) increased excretion of calcium following the administration of estrogens,⁸ (3) significant urinary estrogen titers following castration, and (4) postmenopausal lactation following administration of luteotropin.⁹ The concept of hormonal-dependency has been the chief rationale for the application of adrenalectomy to the problem of breast carcinoma. There is insufficient evidence in the literature at present to indicate that the routine determination of estrogen-dependency is of any importance in planning further treatment. More observations are needed. For example, Pearson⁸ reported that among four patients who failed to respond to castration, none responded to adrenalectomy; among six patients who did respond to castration, five had some improvement after adrenalectomy.

Testosterone apparently caused progression of this patient's disease each time a course was given. The preoperative and postoperative courses of testosterone were of equal duration. Roentgenograms of the chest taken before each course showed the same degree of pulmonary infiltration, and those after

each course of testosterone showed strikingly similar degrees of progression. Therefore, the suggestion is that the metabolic degradation products of testosterone, some of which may have estrogenic activity,¹⁰ were unfavorable to this patient. The observation that this was true *before* and *after* hypophysectomy is important, for androgens produce partial repair of the adrenal atrophy produced by cortisone or hypophysectomy in rats.^{11, 12}

The surgical approach in hypophysectomy involves sectioning one olfactory nerve.¹³ A major problem in surgical technic arises from the fact that complete removal of pituitary tissue may be impossible, owing to the frequent presence of pituitary cells in the dural wall of the cavernous sinus. Evidence indicates that these cells can maintain partial pituitary function following hypophysectomy. In an effort to prevent failure of ablation from this source, the pituitary fossa is packed with cotton soaked in Zenker's solution for a few minutes before closure. Radioisotopes may be used in similar fashion.¹⁴ In this patient, gross removal fortunately caused ablation.

Hypophysectomy in carcinoma of the breast is well tolerated. Operative mortality compares favorably with the 5 per cent mortality experienced in bilateral adrenalectomy. Postoperative morbidity was minimal in this patient. No more than the usual cerebral edema from craniotomy was noted with the preoperative and postoperative doses of cortisone and salt which were stated in the protocol. Cortisone, supplementary salt, desiccated thyroid, and pitressin if needed, prove sufficient for maintenance after hypophysectomy. In this patient, the minimum maintenance dose of cortisone was 62.5 mg. daily.

The criteria for complete hypophysectomy have been defined as follows:¹⁵ (1) disappearance of urinary gonadotropin, (2) reduction of I¹³¹ uptake and serum protein-bound iodine to myxedematous levels, (3) acute adrenal crisis within one week after withdrawal of cortisone or ACTH, and (4) no evidence of pituitary tissue at autopsy. M. C. Li has reported that hypophysectomy was considered to be complete in 27 of 36 patients with neoplastic disease.¹⁵ This patient exhibited all criteria except that protein-bound iodine determination and postmortem head examination were not performed. However, Li has stated that none of the patients fulfilling his first three criteria had pituitary tissue at autopsy;⁶ furthermore, those patients who had abnormal thyroid studies after incomplete hypophysectomy regained normal indices within a few weeks.⁴ Therefore, one may conclude that this patient had a complete hypophysectomy.

Sustained diabetes insipidus occurred in this patient. Diabetes insipidus may or may not occur after hypophysectomy. Postoperative polyuria usually oc-

curs, but its duration is unpredictable. The presence or absence of diabetes insipidus cannot be included among the criteria which indicate complete hypophysectomy. The exact role of the anterior pituitary in diuresis is not known. Much knowledge supports the opinion that diabetes insipidus is not sustained in the absence of a functioning adenohypophysis.¹⁶ For example, patients with incomplete hypophysectomy are expected to have diabetes insipidus from pituitary stalk-section. However, 67 per cent of patients with complete hypophysectomy had clinical polyuria.¹⁷ Furthermore, the persistence of polyuria in such patients after the third post-operative week depended on the continual administration of cortisone or ACTH.^{1b} Recent evidence suggests, therefore, that polyuria following hypophysectomy does not depend on the presence of the anterior pituitary, and emphasizes the importance of ACTH as a mediator of the diuretic action of the adenohypophysis.

The adrenal glands of this patient exhibited definite atrophy, but the adrenal cortex contained abundant fat in small droplets. This was unexpected, as hypophysectomy causes adrenal cortical atrophy with depleted fat in large droplets.¹⁸ The implication is that the adrenal pattern in this patient was altered by other factors. It is unlikely that cortisone alone produced the observed adrenal changes, for cortisone causes adrenal cortical fat depletion.¹⁹ Testosterone can block the cortical fat-depleting effect of cortisone.¹² Histopathologic studies of the adrenal glands of hypophysectomized human beings, particularly those who have received cortisone and testosterone, have not been reported. In hypophysectomized rats, androgens with cortisone cause partial adrenal repair.²⁰ Perhaps testosterone caused a re-appearance of fat in this patient's adrenal glands.

DISCUSSION

The newer methods of palliation in metastatic breast carcinoma include adrenalectomy, the use of cortisone alone, and hypophysectomy. Definite indications for the use of these methods have not been established as yet. They are not recommended as routine procedures. Considerable time must elapse before response rates and mean survival times can be accumulated.

Of these procedures, adrenalectomy has been the first attempted and most extensively used. Much experimental knowledge has been gained from its use. Bilateral adrenalectomy has a 5 per cent operative mortality rate⁹ and is more traumatic than hypophysectomy. It must be remembered that bilateral adrenalectomy is not necessarily total, for 32 per cent of human beings have accessory adrenal cortices in the region of the celiac axis.²¹ Objective im-

provement has occurred in 22 per cent, and subjective improvement in 45 per cent of patients in one series.²² Any improvement may be evident within two weeks; the average response period is nine months.²³ The mean survival time following adrenalectomy has not been published.

The status of cortisone alone in the palliation of breast cancer is somewhat indefinite at present. It has been stated that cortisone is capable of producing such complete suppression of adrenal cortical function that adrenalectomy for neoplastic disease largely has been discarded.²⁴ However, similar case series are not available for comparison of adrenalectomy with the use of cortisone alone. Cortisone does cause reduction of urinary estrogen levels in postmenopausal women with breast cancer,²⁵ but not disappearance of estrogen with low doses. The few references in the literature to the use of cortisone alone report no objective benefit from ordinary doses. Pearson²⁶ believes that further trials with cortisone are indicated in doses of 200 to 300 mg. daily, with which he has estimated that 30 to 50 per cent of patients have objective improvement, and an additional 20 to 30 per cent have subjective improvement. The use of large doses of cortisone is justified only when artificial menopause, roentgen therapy, or proper hormonal therapy fail.

Hypophysectomy is more than another means of manipulating the hormonal environment. It is an important step in the experimental study of breast carcinoma. At present, the rationale for hypophysectomy is no more clear or well established than that for adrenalectomy. Like adrenalectomy, it is based in part on the hypothesis that certain hormones, particularly those having estrogenic activity, play a permissive role in the course of breast cancer. Therefore, one aim of hypophysectomy, not always accomplished, is the simultaneous suppression of estrogen sources in the ovaries, adrenal glands, and perhaps accessory adrenal cortices.

The use of hypophysectomy is based also on demonstrations in animal experiments that the pituitary gland plays a role in the development of breast cancer.²⁷ Its use in human beings may facilitate studying these mechanisms because of certain species differences in hormonal physiology. For example, Pearson²⁸ cites one patient in whom growth hormone stimulated a metastatic breast lesion. The patient had had a relapse after oophorectomy and adrenalectomy. Hypophysectomy was performed and regression lasted 14 months. Three months postoperatively, while the patient had an osteolytic lesion and was receiving cortisone, growth hormone was injected daily. This caused a rise in calcium excretion, with a negative calcium and phosphate balance in the same proportion as these ions exist in bone. The calcium

excretion returned to normal promptly on withdrawal of growth hormone.

SUMMARY

A patient with metastatic duct cell carcinoma of the breast had excellent objective and subjective improvement for five and one-half months after hypophysectomy. Postoperative survival time was eight months. Osteolytic lesions did not regress. Testosterone caused progression of disease before and after hypophysectomy.

Hypophysectomy should not be established as a palliative procedure for metastatic breast carcinoma until statistics demonstrate that the results offered will justify the means employed.

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People seem to resent the American Medical Association as being to blame, in some vague way, for sickness that has created a problem for them.

As a matter of fact, people actually resent illness. Illness is not planned for. It disrupts the routine of life. It is unpleasant. It is dangerous and threatens to kill those we love. It is expensive.

We must in some way get people to realize that really the American Medical Association is in their corner in this great fight for health.

*Vincent Askey, M.D., Vice-Speaker
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The Treatment of Pulmonary Emphysema

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In order for us better to understand the treatment of pulmonary emphysema it might be well to discuss briefly the various types of this disease as we understand it today. The classification is somewhat confusing though much has been written on the subject.

The word "emphysema" comes from the Greek and means "inflation." Pulmonary emphysema was first described by Floyer of Litchfield in 1698, who called this condition "flatulent asthma" by which he meant that the lungs were blown up with air. Laënnec in 1838 and Jenner in 1857 gave us a better understanding of the clinical and pathological aspects of this disease. It may be localized or diffuse, acute or chronic, unilateral or bilateral, and it is characterized by loss of elasticity and dilatation of the pulmonary alveoli, with eventual rupture of the walls of the alveoli and the formation of inelastic blebs or bullae.

We may further classify pulmonary emphysema as: (1) compensatory emphysema, (2) acute vesicular emphysema or bullous emphysema, (3) senile, atrophic, or nonobstructive emphysema, and (4) pseudohypertrophic emphysema or so-called hypertrophic emphysema, chronic pulmonary emphysema, or obstructive emphysema. This latter form has at least nine other adjectives of which perhaps the most descriptive is the term "chronic large lung."

Compensatory emphysema of the acute form, which is reversible, may be seen associated with such diseases as bronchopneumonia, lobar pneumonia, and tuberculosis. It is a nonobstructive distention of a part or of the whole lung and may be associated with a shift of the mediastinum. However, if fibrosis occurs, the disease becomes chronic or permanent and is irreversible. Compensatory or localized emphysema may also be due to destruction, maldevelopment, or surgical resection of adjoining segments of lung or resection of the opposite lung.

The treatment of the acute form of compensatory emphysema would be that of the underlying or causative disease. In the case of thoracic surgery, preoperative determination of the condition of the uninvolved lung is most important. The operation may be a success, but the patient may have such poor function of his remaining lung that he is worse off than before his operation. Secondary thoracoplasty may be necessary to eliminate dead air space and thus prevent extensive degrees of compensatory emphysema in the opposite remaining lung.

Acute vesicular or bullous emphysema is a con-

dition which may occur rapidly in cardiac dyspnea. It is seen as a serious and even fatal complication in children with asphyxia due to obstruction of the bronchi and bronchioles, associated with whooping cough, acute tracheobronchitis, influenza, measles, and bronchopneumonia. It also may occur following the aspiration of a foreign body, or with asthma, bronchogenic carcinoma, pneumoconiosis, and sarcoidosis. In other words, this condition can occur with any disease which involves one or more portions of the bronchial tree. Bullae may become very large and are then known as balloon cysts or pneumocysts and may be mistaken for pneumothorax.

Alarcon reports in the January, 1955, issue of *Diseases of the Chest*, the appearance of large multiple bullae in the parenchyma of one or both lungs, which tend to grow or to decrease and eventually disappear. These bullae are seen in tuberculous patients receiving antibiotics or chemotherapy, particularly in those receiving isoniazid. He also says that this phenomenon has been reported to have occurred in patients treated with streptomycin and paraminosalicylic acid. Only 25 such cases have been reported in Europe and South America, while one such case has been reported in the United States. The mechanism of the development of these bullous cavities has not as yet been satisfactorily explained. The outcome has been favorable, with rapid improvement of the general condition, gain in weight, the disappearance of toxic symptoms, and eventual disappearance of the bullae.

Bullae in nontuberculous patients, in cases where the cyst is solitary or where there is a collection of cysts in one portion of the lung, may be removed surgically, but widespread cysts are best treated the same as chronic emphysema.

We will next consider senile emphysema which is also called "atrophic" or "postural" emphysema. This is a nonobstructive form of pulmonary overdistention, a condition where the lungs are small. At autopsy, when the chest is opened, the lungs collapse. Alveoli are found dilated, and they lack elasticity, just as does the skin of old people, and may be likened to degenerative changes seen in all tissues of an elderly person. There is lack of muscle tone of the chest wall, the costochondral and costovertebral junctions are found to be calcified, the bronchi may show calcification, the pulmonary vessels are sclerotic, and there are myocardial changes com-

mensurate with old age, leading to pulmonary congestion and finally cardiac decompensation.

There is another form of senile emphysema which is known as the Kountz-Alexander type. Lung changes are secondary to an increase in the size of the thoracic cage, brought about by a degenerative process in the intervertebral discs causing the spine to become straight and stiff. As the degeneration progresses, the intervertebral discs become separated from the vertebra and may even disappear entirely. This leads to kyphosis and an outward flare of ribs, which in turn produces barrel chest. The lungs follow the enlargement of the chest cavity and therefore increase in volume.

Since cardiovascular disease is the common cause of dyspnea in emphysema of old age, we direct our treatment to this condition. Digitalis and mercurials are used, and when bronchial infection complicates the picture, we combat this by the administration of the proper antibiotic. We deem this more important than trying to treat the emphysema itself.

Treatment of emphysema of the aged is otherwise much the same as in hypertrophic emphysema. Vital capacity is somewhat reduced in senile emphysema, but there is usually little impairment of the respiration function in uncomplicated cases.

The so-called hypertrophic emphysema is better termed "pseudohypertrophic" emphysema because there actually is no increase in cellular or tissue structure, but rather a destruction of alveoli and loss of elastic fibers. With the development of emphysema, many of the interalveolar septa are destroyed, creating cyst-like air spaces in the lungs. Those localized in the subpleural portion of the lungs are called blebs, while those in other parts of the lungs are known as bullae. There is also a decrease in the corresponding pulmonary capillary bed.

This type of emphysema affects both lungs, and in children it usually follows recurring attacks of asthma or bronchitis with diseased tonsils and adenoids. It may also follow whooping cough. In older patients, mostly men, it may occur secondary to such conditions as bronchial asthma, chronic bronchitis, and any pulmonary condition where there is partial bronchial obstruction. Inhalation of harmful dusts, fumes, and gases over a prolonged period may cause emphysema. Hereditary emphysema has also been described, and we know that emphysema may occur in several members of the same family. Cohnheim and Eppinger believe this is due to a developmental defect of elastic fibers.

The tracheobronchial airways are elongated and dilated during inspiration, because they take part in the general expansion of the lungs as the thorax enlarges, and they return toward the resting state on expiration when the chest becomes smaller. Inspira-

tion may not be affected significantly by partial obstruction, but expiration may be greatly affected. The alveoli do not empty normally; there is stretching and narrowing of the alveolar capillaries. There are progressive trophic changes, with loss of elastic tissue and rupture of interalveolar septa with the formation of blebs and bullae. These do not empty as completely as normal alveoli; the elastic recoil of the lung is diminished, and as more air is trapped with each succeeding breath, the lungs slowly increase in size.

The chest cage tends to assume the inspiratory position and appears to be fixed and inflexible. The diaphragm is flat or low, having a stretched appearance. Negative intrapleural pressure approaches zero, but with increased respiratory effort there is a wide swing, positive in expiration and negative in inspiration. The vital capacity (the maximal volume of air that can be expelled from the lungs by forceful effort following a maximal inspiration) is diminished. The tidal air (the volume of air moving in and out with each breath during rest) is normal or little impaired, while the residual air (that remaining in the lungs in extreme expiratory position) increases. The minute volume of respiration is also increased. The oxygen saturation of arterial blood is reduced from 95 per cent (normal) to less than 90 per cent, even at rest. This is due to unequal mixing and distribution of inspired air with residual air in the enlarged alveoli. At the same time there is an increase in the CO_2 tension in both arterial and venous blood. As the disease progresses, this eventually causes a severe respiratory acidosis. With the progressive anoxia, a compensatory polycythemia usually develops.

At first there may be little strain upon the right ventricle because of reduced capillary bed, but with advanced pulmonary emphysema, pulmonary arterial hypertension frequently develops. There is an increased strain on the right side of the heart which eventually causes right-sided heart failure, and cor pulmonale.

The symptoms of hypertrophic or pseudohypertrophic emphysema come on insidiously. There is usually a history of asthma or chronic bronchitis or of prolonged exposure of certain silica or asbestos dusts. Dyspnea occurs on slight exertion, often with expiratory wheezing. Cyanosis is observed, and there is an increase in venous pressure which can be seen by the fullness of the jugular veins and even the arm veins. Most patients have some degree of cough. There is easy fatigue, poor appetite, and insomnia. Pain in the epigastrium may occur and is due to overstrain of the abdominal muscles, or may result from heart failure with an enlarged liver or anoxia of the diaphragm. The accessory muscles of respiration are

active, and there is marked increase in the time of the expiratory phase. The anteroposterior diameter of the chest is increased with an elevation and horizontal position of the ribs, producing the characteristic "barrel chest." Chest expansion is reduced and protrusion of the upper abdomen is less pronounced or even absent.

The physical signs are rapid, shallow breathing with the chest held in permanent inspiration position. The apex beat of the heart cannot be seen or palpated. Heart sounds are distant. Tactile fremitus is diminished throughout. The percussion note is hyperresonant and even tympanic, sometimes even including the cardiac area. Breath sounds are feeble with short, faint, harsh inspiration and prolonged low-pitched expiration. Sibilant and sonorous rales are often heard.

X-rays of the chest show enlarged lung fields which are highly illuminated, with the upper lobes showing a decrease in density while the lower lobes may show an increase in density. When bullae are present, they will be seen as fine lines in the shape of crescents, semicircles, and even complete circles. The diaphragm is low with a decrease in its convexity. The ribs appear more horizontal with a widening of the intercostal spaces. The anterior and posterior mediastinal spaces are enlarged. Kyphosis of the dorsal spine is seen. The heart shadow is usually small.

In the treatment of pseudohypertrophic emphysema we must first consider preventive measures. Diseased tonsils and adenoids in youngsters should be removed. Often allergic manifestations make themselves known early in life. There is usually a family history of allergy or asthma, and in these patients the control of the allergic condition offers the most important indication for treatment. Great care must be exercised to help prevent recurring attacks of bronchitis.

We advise patients to live in a warm equitable climate during the late fall and winter months, and they should remain there until well into the spring months. This, however, is seldom possible, so we advise our patients to wear warm clothing of a nature that will prevent perspiring indoors and chilling out of doors. Sudden changes in temperature, such as going from overheated homes and places of work out into the cold, are particularly bad. We advise our emphysematous patients to wear a two-fold underwear consisting of a pure cotton inner layer and 25 per cent wool outer layer. Woolen socks should be worn because wool does not chill when wet as does cotton. Smoking should be prohibited.

We advise our patients as to their activities and restrict these to whatever they can do without fatigue. Some activity is advised as this helps to pre-

vent mental depression. Since many emphysematous patients are obese, a reduction in weight is necessary to reduce the demands upon both circulation and respiration. Conversely, when there is weight loss due to anorexia, we prescribe appetizers and vitamins.

Bronchial infection such as chronic bronchitis is often associated with chronic emphysema. Paroxysmal coughing and wheezing, with sputum, tend to aggravate the bronchiolar obstruction by exudate and edema of mucous membranes. Repeated upper respiratory infections during the winter months are common in these patients. Bronchiectasis is a rather frequent complication of chronic bronchitis and emphysema. Effective and appropriate antibiotic therapy must be instituted immediately. Organisms from the nose, throat and sputum should be identified, and sensitivity tests of the bacteria to the various antibiotics should be made. In cases where therapy is prolonged, one must be on the alert for a change in bacterial flora. Reinfections due to these new invaders, as bacteria, molds, and fungi, may be serious.

Penicillin is given if the organism is predominantly gram-positive, and streptomycin is added or given alone when gram-negative organisms are also present. Antibiotic aerosols combined with bronchodilator substances are used, but we hesitate to do so because of the hazard of local or generalized allergic reaction to penicillin and streptomycin. Antihistamine preparations may be given, orally or parenterally, to minimize these reactions. Broad spectrum antibiotics such as aureomycin, achromycin, and terramycin may also be employed. We have never felt that antibiotic aerosols would or could reach poorly ventilated lung areas properly and feel that the parenteral route is best. In cases where penicillin fails to get into the sputum in high enough concentration, Neo-Penil, a hydriodide ester of penicillin, given intramuscularly in doses of 500,000 units every eight hours, will produce a low systemic blood level with a high sputum concentration.

Bronchiolar obstruction due to conditions other than infection are treated with bronchodilator drugs. There are many antihistaminic preparations on the market, but we prefer to use an equal mixture of syrup of hydriodic acid and orthoxine hydrochloride, one teaspoonful four times daily after meals and at bedtime. In addition to this we use Cardalin, a protected aminophylline preparation. Each tablet contains aminophylline 5.0 gr., aluminum hydroxide 2.5 gr., and ethyl aminobenzoate 0.5 gr.

The low incidence of gastric disturbance with this preparation is noteworthy, and higher and more sustained theophylline blood levels are obtained, thus giving more continued relief from paroxysms of bronchospasm with increase of vital

capacity and decreasing dyspnea and orthopnea. Of the aerosol bronchodilators, Isuprel seems to be the best sympathomimetic drug. We have our patients use this in a nebulizer, either alone or with Alevaire. The patient should be instructed carefully how to use these to best advantage. He is advised to exhale completely, then inhale deeply as he vaporizes the solution by compressing the bulb of the nebulizer. This should be repeated three to six times, and patients are often advised to use this before meals and at bedtime. Aerosols are also introduced with oxygen as the source of pressure, but there must be no water in the humidifier. Neosynephrine hydrochloride is also a useful preparation where refractoriness or toxicity has occurred from the use of bronchodilators. It likewise helps to diminish vascular engorgement of the pulmonary vascular tree.

Oxygen inhalation in the treatment of chronic emphysema is primarily for the relief of anoxia that occurs during various stages. Inhalation of oxygen in low concentration is the safest to use, and oxygen may be administered by nasal catheter, face mask, face tent, or enclosed tent a half to one hour two or three times a day. In cases of severe dyspnea or anoxia, continuous oxygen may be given with caution.

The syndrome of carbon dioxide intoxication and respiratory acidosis may occur in patients receiving oxygen. High concentrations of oxygen given suddenly are poorly tolerated, causing such symptoms as headache, weakness, confusion, lassitude and irritability, due to cerebral effects secondary to high CO_2 and a depression of pH, followed by depression of respiration, coma, and sometimes death.

Encouraging results have been reported after the use of intermittent positive pressure breathing in the treatment of pulmonary emphysema. Trimble and Kieran report that approximately two-thirds of a series of 37 patients experienced substantial improvement. They used 100 per cent oxygen inhaled through a Bennett valve, type TV-2P, which allows the oxygen to flow into the lungs under regulated inspiratory pressure of up to 20 cm. of water. Isuprel was nebulized into the oxygen stream in most of their patients. Improvement was noted in the three most outstanding symptoms: dyspnea, cough, and sputum.

Pneumoperitoneum therapy is considered by a number of clinicians as an effective procedure to help restore a more efficient function of the diaphragm. For many emphysematous patients, the diaphragm is the only structure capable of carrying on pulmonary ventilation. The diaphragm is elevated by the increased intra-abdominal pressure which helps to re-establish the normal pressure differential between the two sides of the diaphragm. With the

return of negative intrapleural pressure, there is return of its normal pulling action on the diaphragm with a resultant improvement of pulmonary ventilation.

Satisfactory results will not occur in the presence of extensive pulmonary fibrosis, adhesions, or atrophy of the diaphragm or when the lungs have lost all of their elasticity. In these cases the lungs become compressed, blood accumulates in the right ventricle, cardiac output is decreased, and circulation time is increased, which leads to eventual heart failure. Beck, Eastlock, and Barach recommend venous pressure as a guide for pneumoperitoneum therapy. They advised that the treatment be discontinued if there is a rise in venous pressure, but it is a good sign if it shows no change or drops.

Breathing exercises should be taught all emphysematous patients. Schutz in 1935 was the first to recommend expiratory breathing with pursed lips. Active and passive diaphragmatic breathing exercises have long been found valuable. Manual compression of the upper abdomen and lower chest, in rhythm to the expiratory phase of respiration, is useful when the procedure is faithfully practiced daily. Specially constructed abdominal belts which raise the diaphragm by pressure from below are often beneficial.

Chronic cor pulmonale with or without congestive heart failure usually manifests itself in the final stages of chronic emphysema. Digitalis should be used when there is evidence of right ventricular failure. Mercurial diuretics are used in patients with cor pulmonale, even though there may not be definite cardiac failure. Diuresis diminishes extracellular body fluid. Frequent small doses of mercurial diuretics are preferred to large doses, because the latter may lead to sudden loss of electrolytes. Patients should be weighed daily so that their weight loss can be regulated. A weight loss of two to four pounds after a mercurial injection is preferred to greater loss. Eventually the patient should be maintained at or as near to his "dry" weight as possible.

Heavy sedation should be avoided as both barbiturates and morphine depress the respiratory center. Sodium bromide, chloral hydrate, and paraldehyde may be used. These can be given rectally in olive oil or cornstarch emulsion. When heavy sedation is required, ether is used, 60 to 90 cc. in an equal amount of sweet oil high up in the rectum.

In cases of chronic pulmonary emphysema secondary to bronchial asthma that do not respond to treatment as already outlined, we use ACTH, cortisone, hydrocortone or Meticorten. Effective relief from symptoms may be provided from these preparations when all other known measures of therapy have failed. Hydrocortone has been found to bring about improvement in one-half the dosage of cor-

tisone, with easing of symptoms noted on the first or second day of treatment. The dosage of Meticorten is from one-fourth to one-fifth that of hydrocortone, and the advantage of this steroid is that it is devoid of the major undesirable actions of sodium retention and excessive potassium depletion.

Contraindication to any of the steroids would be peptic ulcer and active pulmonary tuberculosis. In patients with inactive tuberculosis, it is advisable to use streptomycin and para-amino salicylic acid therapy.

SUMMARY

1. Pulmonary emphysema of various types has been classified as to: localized or diffuse, acute or chronic, unilateral or bilateral, and as (1) compensatory, (2) acute vesicular or bullous, (3) senile, atrophic, or nonobstructive, and (4) pseudohypertrophic or hypertrophic, chronic pulmonary emphysema, or as obstructive emphysema.

2. Pathologic and clinical aspects have been briefly discussed, together with treatment.

3. Pulmonary emphysema is common, and chronic forms are usually irreversible.

4. As our population grows older, we are finding more patients with pulmonary insufficiency, making them "pulmonary cripples."

5. Treatment of these patients depends on a well planned, individually outlined program which necessitates the cooperation of the patient.

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Lymphoepithelioma of the Parotid Gland

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INTRODUCTION

Literature referable to parotid tumors is most confusing. Many tumors have not been recognized as a definite entity and have been reclassified under another name. It is our purpose to present here an example of a rare benign lesion of the parotid gland.

In 1951, Kirklin¹ stated the basic concept when he voiced the opinion that the difficulty was inherent in the classification of these lesions themselves. Kirk-

lin *et al.* presented a good classification in which the lymphocytic tumors of the parotid gland are listed in category six, comprising 1.5 per cent of all neoplastic lesions of the gland. We believe this tumor falls in this group.

These tumors have been occasionally called Mikulicz's syndrome or Mikulicz's disease in the past. Tumors of the parotid bearing the name of Mikulicz fail to follow any consistent, pathologic structure. To attempt to delineate this group is impossible. Kirklin *et al.* failed to find a description of these tumors in the literature prior to 1951. These tumors were char-

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acteristically described as consisting of a monotonous array of lymphocytes with an occasional germinal center and areas of reticulum cells.

In 1940, Fein¹ presented one case which he called "lymphoepithelioma." Fein mentioned a tumor described by Regaud⁷ in 1912. Extreme radiosensitivity was mentioned by both Fein¹ and Regaud.⁷

In 1952, Godwin³ reported 11 cases which he labeled variously as "adenolymphoma," "chronic inflammation," "lympho-epithelioma," "lymphocytic tumor" and "Mikulicz disease." In one instance comparison with the series reported by Kirklin⁴ was made by McDonald,⁴ by actual pathologic examination. These tumors were found to be identical with the lymphocytic tumor reported by Kirklin.⁴

The lesions described by Godwin³ consisted of lymphocytic tissue containing germinal centers which appear to originate in the ductal tissue of the gland.

All recent authors suggest that these lesions are not malignant in nature. Also mention is made of their susceptibility to radiation.

Nash and Morrison⁶ described a bilateral swelling of the parotid of a lymph-epithelial nature in a 27-year-old female, which responded to esophageal gastroplasty of the Finney type. It was felt that local manifestations were indicative of a generalized disease.

Lynch and Sucre⁵ reported, in 1955, a single case in a 41-year-old male. The mass in one parotid gland was thought by the authors to be malignant and to represent a reticulum cell variant of the lymphoma group. It was felt that this represented a malignant variation of the tumor described by Kirklin⁴ and associates. This seems to further emphasize the difficulty found in the classification of these tumors.

This type of tumor has been mentioned in the same breath with papillary cystadenoma, lymphomatosia, adenolymphoma, papillary adenolymphoma, papillary cystadenoma, branchiogenic cystadenolymphoma, branchiogenic adenoma, cylindrocellular branchiogenic adenoma, onkocytoma, and Warthin's tumor. Gaston and Tedeschi² have considered all these in the same classification and category. It is not felt that the lymphocytic tumors should be mentioned as identical with the adenolymphoma.

CASE REPORT

Mr. J. A. S., farmer, age 21, presented himself in 1951 with a discoid lupus erythematosus; biopsy was done, and on conservative treatment the lesion disappeared.

The patient next presented himself in 1954, at which time he complained of a bilateral parotid swelling. The patient had noted this swelling more on the right than on the left for approximately one year. It was painless.

Physical examination revealed normal findings with the exception of a bilateral swelling approximately $3\frac{1}{2} \times 4\frac{1}{2}$ cm. in the right parotid area and a mass approximately 1×3 cm. in the left parotid area.

Sialograms were done on March 30, 1954. There was no evidence of ductal obstruction.

The material removed from each side was identical in appearance and consisted of white, somewhat friable tissue without any striking gross features.

Microscopic examination showed masses of lymphocytes, throughout which were solid areas of epithelial cells (Figure 1). Both the lymphocytes (Figure 2) and the epithelial cells (Figure 3) were mature. It was thought that this lesion represented one of the so-called "benign lymphoepithelial" lesions of the salivary glands, and it was so diagnosed.

Sections of the characteristic pathologic tissue and the slides were sent to Dr. D. C. Dahlin, Department of Pathology, St. Mary's Hospital, Rochester, Minnesota. It was his opinion that this was a benign lymphoepithelial lesion and that it would fall into the sixth category described by Kirklin⁴ in his classification.

The patient received 900 roentgens of x-ray therapy applied to each parotid. The patient experienced a melting away of the growths in question. X-radiation resulted in a cure of the lesion. This particular

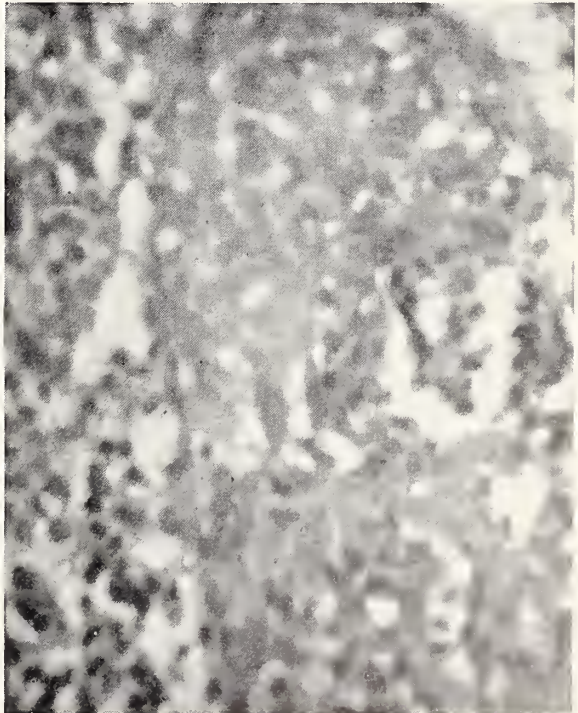


Figure 1



Figure 2

patient is unique in that he had bilateral growths. He is alive and well one year later.

CONCLUSION

An additional case, similar to those reported in the literature under the lymphoma group of parotid tumors, is recorded. The natural history of this lesion is fairly well known, although only a relatively small number have been reported. They are more common in women; tend to occur toward middle age; can recur locally; never metastasize, and can be bilateral. Lymphoepithelioma of the parotid responds to either surgery or radiation.

In the opinion of the authors this does not seem to be a malignant lesion.

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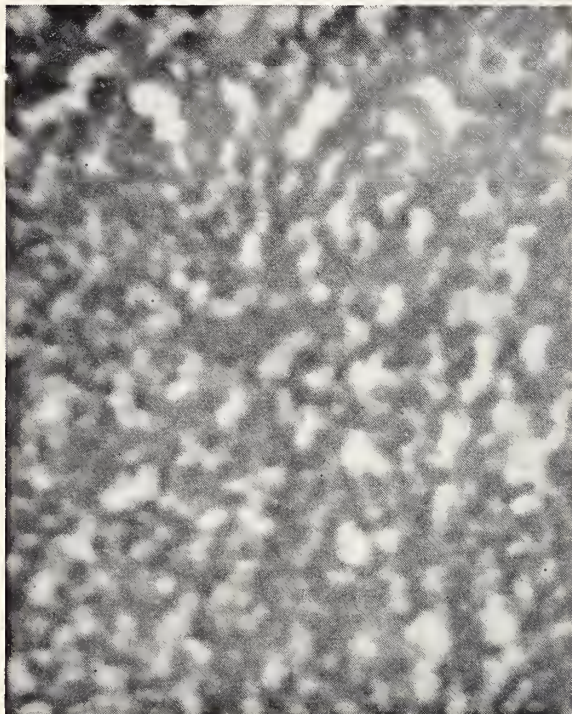


Figure 3

Some professional people know the price of everything and the value of nothing. Being exposed to the "gravy of grateful hearts" might change their views on public relations, which are the sum total of our private patient relationships and cannot be measured by surveys or bought with dollars.

*Harlan English, M.D.
A.M.A. Delegate
Danville, Illinois*

A Medical Student Looks at Blue Shield

Wilbur C. Pickett, Jr.

Baltimore, Maryland

The medical student of today finds his chosen profession in a dynamic state. Major social, economic, and political changes in recent years have had large effect in the medical field. The story of Blue Shield is in large measure the story of these changes and the adjustment of the medical profession to them.

The great depression centered national attention upon problems of individual security. Social security legislation illustrated the possibility of utilizing the sovereign powers of state or nation in the attempt to alleviate personal distress affecting large numbers of people. A climate of political experimentation made inevitable the advancement and advocacy of various proposals for the socialization of medicine.

The necessity for some concerted plan for dealing with the problems of medical costs had been suggested in the report of a five-year study by a committee headed by Dr. Ray Lyman Wilbur, a past president of the American Medical Association and then Secretary of the Interior in the cabinet of President Hoover. The majority report recommended that medical costs be financed through insurance or taxation or by such methods in combination.

A most significant development in the attitude of the medical profession toward the problem of medical costs occurred in September 1938 when the House of Delegates of the American Medical Association endorsed the principle of voluntary health insurance. This endorsement was the first of its nature. It occurred during a special session of the American Medical Association. It set the stage for a voluntary health program that has been called the greatest cooperative health effort in world history, and it occurred at a time when the power of the profession to control the economic pattern of medical practice was being seriously questioned.

The choice by the profession of voluntary medical prepayment plans as a means of adjustment to changing conditions was probably, as Cunningham suggests,¹ attributable to the phenomenal success of the community-wide non-profit Blue Cross plans for hospital care that originated at Baylor University in Dallas in 1929.

The first physician-sponsored prepayment plan to follow the 1938 American Medical Association endorsement of voluntary insurance was established by the California Medical Association on a non-profit

basis in 1939. The Michigan State Medical Society followed the California group with a similar plan in 1940, shortly afterwards other state and county medical societies adopted similar prepayment plans, and what has subsequently become known as the Blue Shield Plan was under way. The plan represents an association of voluntary non-profit medically sponsored, medical care prepayment plans. The tremendous expansion of Blue Shield is reflected in the fact that in 1941 there were eight Blue Shield plans with a total of 370,000 members whereas by the end of 1953 there were 77 plans with 28,150,000 members.

The success of Blue Cross and Blue Shield programs is attributable in large part to the fact that in addition to acquiring large membership within themselves they catalyzed a voluntary health insurance movement that surpassed the success of any previous insurance program in history. Only in the wake of their success did commercial insurance companies awaken fully to the possibilities of the medical care market. Today Blue Shield plans write about 33 per cent of the surgical insurance and 47 per cent of the medical coverage; commercial plans account for 60 per cent of the surgical insurance and 39 per cent of the medical care insurance. Perhaps the best measure of the success that the voluntary plans have had in removing the economic barriers to medical care is reflected in the fact that approximately 100,000,000 Americans have enrolled in hospital or medical prepayment and insurance plans.²

Thus Blue Shield is the effective answer of organized medicine to a great and challenging socioeconomic problem—the problem of how best to meet the cost to the individual of serious medical emergencies. The problem is as old as civilization, but the ever-changing complexities of social organization give it a constantly new appearance and require that any plan for coping with it be flexible and subject to adjustment to the specific conditions of time and place. Blue Shield has the merit of that great quality.

The basic concept is that of insurance which involves what Sir Winston Churchill has called "the magic of averages applied to the salvation of the multitude." It is but natural and logical that any expansion of this principle should be applied to protect the individual against the loss of capital or credit or both as a result of illness. The conditions of its application, however, require much thought.

This essay won first prize in a national contest sponsored by Blue Shield and the Student American Medical Association. Mr. Pickett is a student at the University of Maryland.

The problem of how best to utilize the principle is essentially one for resolution by the medical profession because, despite the intrusion of social and economic considerations of a non-medical nature, the only comprehensive knowledge of the factors of controlling significance in any feasible plan is possessed by the medical profession. Quite obviously no other profession or group has had comparable experience with illness, its causes, costs, cures, and effects. The whole interplay of human relationships in respect to illness—actual, feigned, or anticipatory—is under the constant observation of the medical profession to a degree not even approximated by any other body of men.

It is for this reason, chiefly, that the medical profession—almost as a unit in this country—has rejected the concept of governmental responsibility for individual medical costs. The concurrence of other professions and groups, fortified by the adverse experience of those nations which have tried it, supports the view of the medical profession in this country that the occasional advantage to an individual of socialized medicine is much more than offset by its individual and group disadvantages.

All of the visualized values of socialized medicine—which have led to its adoption in some countries, such as England—can be realized through the wise employment of the related, but definitely distinct, concept of group responsibility through voluntary insurance without the sacrifice of those principles which have made America pre-eminent in the field of modern medicine.

The challenge to the medical profession implicit in the support of socialized medicine by influential persons and groups in this country is of especial interest to those of us who are medical students. The practitioners of tomorrow must come from our group and therefore we must expect to cope with the same basic problem and seek to carry forward the policies dictated by the experience and the judgment of our predecessors and elders.

Blue Shield has been built on principle and proved by experience. It is no criticism to say that some experimentation—with resultant failure as well as most encouraging success—has been necessary in the past or that future experimentation may be required in the effort to achieve maximum success. Some degree of experimentation with proper attention to the safeguards dictated by experience, principle, and judgment, is essential to progress in almost any field.

Medical men, because of their awareness of the problem of the potentially adverse effect of medical costs to the individual and their clear and full realization of the total non-desirability of socialized medicine as an attempted solution of the problem, are morally obligated to use all of the resources of the

profession to see that acceptable methods of dealing with the entire problem are successful in the widest possible area and the highest possible degree.

One of the areas yet to be explored fully relates to the fixing of the point at which the advantages of early diagnosis as the result of examinations induced by insurance—which would not be made otherwise—may be offset by excessive or unwarranted demands for medical attention induced by the same factor. An insurance plan or contract cannot change human nature and there will always be individuals who are perverse as well as those who are merely unfortunate, but fortunately the principle of insurance rests on the laws of probability with respect to a group rather than the individuals comprising it. Thus it may be possible through safeguards yet to be devised to embrace the risks deriving from defects of character or judgment in the process of insuring against the costs of illness and minimizing its incidence. After all, bonding companies do survive. Certainly in any event it will be possible ultimately to determine with reasonable accuracy the point at which insurance ceases to be feasible.

The vast increase in recent years in the total volume of insurance for the prepayment of medical and hospital costs has been a most significant and desirable social development. Undoubtedly it has lessened the demand that would otherwise have existed for solution of the problem by political means. There can be no doubt either that the medical profession, through its sponsorship of various Blue Shield plans, has contributed enormously to the accomplishment of what has been done, both directly and indirectly. And it may be that the contribution made indirectly by forcing competitive plans of other sponsorship to provide wider coverage and more liberal protection will prove in the long run to have been the more important effect.

The overall success of Blue Shield is undoubtedly attributable to its insistence upon certain uniform conditions based on principles. Adhering to these principles and cautiously proceeding with the pioneering efforts to bring larger areas of medical costs within the protection of insurance, it is reasonable to anticipate a substantial solution of the entire problem.

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Health cannot be dissociated from the particular conditions under which man has to function. It implies fitness to his total environment.—*Rene J. Dubos, Ph.D., Nat. Tuberc. A. Tr., May, 1954.*



It was only about 70 years ago that the first writings about appendicitis appeared, and a hitherto unrecognized disease became one well known with well standardized treatment. Charles McBurney contributed so much to the diagnosis and treatment of the condition that mention of his name is apt to bring to the mind of the listener the disease appendicitis.

He is probably most famous for locating the point at which maximum tenderness is usually found—McBurney's point—and the gridiron type of incision so often used in operations for its removal—the McBurney incision.

Writing of his experiences with appendicitis, gained through his position as director of the surgical service at Roosevelt Hospital and professor of surgery in the College of Physicians and Surgeons, he said, ". . . I believe that in every case the seat of greatest pain, *determined by the pressure of one finger*, has been very exactly between an inch and a half and two inches from the anterior spinous process of the ilium on a straight line drawn from that process to the umbilicus. This may appear to be an affectation of accuracy, but, so far as my experience goes, the observation is correct." (This is not the point so often defined as McBurney's point—halfway between the anterior superior spine and the umbilicus.)

The McBurney incision as described in 1894 is not exactly as commonly used today, though basically it has remained unchanged.

". . . The incision in the skin is an oblique one about four inches long. It crosses a line drawn from the anterior iliac spine to the umbilicus nearly at right angles about one inch from the iliac spine, and is so situated that its upper third lies above that line. . . . The section of the external oblique muscle and aponeurosis should correspond, great care being taken to separate these tissues in the same line, *not cutting any fibers across*. This is easily accomplished.

". . . the fibers of the internal oblique and transversalis muscles can now be *separated*, without cutting more than an occasional fiber, in a line parallel with their course—that is,

nearly at right angles to the incision in the external oblique aponeurosis.

"The transversalis fascia is thus well exposed and is then divided in the same line. Last of all the section of the peritoneum is made.

". . . The appendix having been taken away, the wound in the peritoneum, which is transverse, is then closed by suture. The similar wound in the fascia transversalis is also sutured. The fibers of the internal oblique and transversalis muscles fall together as soon as the retractors are withdrawn, and with a couple of fine catgut stitches the closure can be made more complete. The wound in the external oblique aponeurosis is sewed with catgut from end to end. When the operation is completed it will be seen that the gridiron-like arrangement of the muscular and tendinous fibers, to which the abdominal wall largely owes its strength, is restored almost as completely as if no operation had been done. In performing this operation I have noticed several advantages.

"In the first place, muscular and tendinous fibers are separated, but not divided, so that muscular action cannot tend to draw the edges of the wound apart, but rather to actively approximate them. . . . The fascia transversalis not being drawn away by the retraction of the deepest layer of muscular fibers, this fascia is easily completely sutured, and thus greater strength of repair is assured. No muscular fibers or larger nerves having been divided, pain after operation is almost absent. . . ." (This comment about its advantages has such a familiar ring that it could almost pass for a present-day comment of an advocate of transverse abdominal incisions. Such advantages, it seems, were recognized a long time ago.)

McBurney described some disadvantages of this newly-described incision, sounding the final warning that "it is not an easy operation, and should not be attempted by those who are unfamiliar with operations upon the appendix"—a discouraging comment for present day interns and residents!—O.R.C.

PRESIDENT'S PAGE

The President's Page this month consists of a letter to Doctors Karl A. and W. C. Menninger.

DEAR KARL AND BILL:

This letter is publicly addressed to you as the sons of Dr. C. F. Menninger. In thinking over how I could best promote the activities of the Kansas Medical Society Committee on History and the plans for our centennial celebration three years from now, it occurred to me that Kansas physicians who have practiced with their fathers would have a unique slant on medical history of the state.

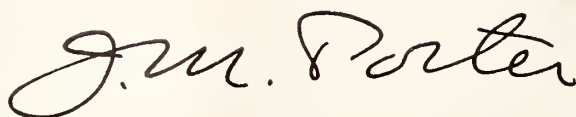
There are, of course, many possibilities to write in this regard: Murray Eddy, Don Medearis, Harold Neptune, Howard and Cecil Snyder, Jim Colt, and dozens of others. I chose you two because it is now almost 50 years since I used to sit in the Presbyterian Church in Topeka and in dull moments of S. S. Estey's sermons study the backs of your necks and the slant of your ears. In those days your chemist brother and your incomparable mother sat with you. Dr. C. F. passed the collection plate, I believe, but as I was not a paying guest that memory is uncertain.

In spite of this Sunday association, the Porters were patients of Dr. McGuire and with all due regard to your father, they didn't come any better in those days than Dr. McGuire. One of the highest honors that ever came to me in my home town was when I returned to Topeka with my medical degree, called on Dr. McGuire, and as we left his office heard him tell his "boy" to "shine Dr. Porter's shoes, too."

These memories of C. F. Menninger passing a collection plate, C. A. McGuire with his colored boy and the like multiplied to the nth degree make up the history of Kansas medicine. You who were fortunate enough to be associated intimately with these men owe the rest of us the obligation of getting your memories down on paper before you, too, are history.

Dr. Merrill Mills, chairman of the Committee on History, is waiting to hear from you.

Sincerely yours,



As this issue of the JOURNAL goes to press word has just been received of the tragic and untimely death of Dr. Porter. The entire membership of the Society joins in extending sympathy to Mrs. Porter and the family.

—Editor.

EDITORIAL COMMENT

TUBERCULOSIS SURVEY

The Kansas Tuberculosis and Health Association is conducting a state-wide survey on tuberculosis beginning early this fall. They hope the medical profession will cooperate in making this a useful undertaking.

This plan was announced at a meeting in Topeka on June 23 which was attended by some dozen physicians including John M. Porter, president of the Kansas Medical Society, and Joseph W. Spearing, chairman of the Committee on Control of Tuberculosis.

Dr. Ralph I. Canuteson, president of the Kansas Tuberculosis and Health Association, introduced Dr. Joseph B. Stocklen, controller of tuberculosis in Cuyahoga County, Cleveland, who has been selected to direct the survey. He explained what the survey hoped to accomplish and how it would be carried on.

Dr. Stocklen began by agreeing that an out-of-state team can approach such a survey with less bias than if it were locally conducted. This is strictly a survey, a study of a problem with recommendations for possible improvements. The study will attempt to learn the existing conditions in relation to tuberculosis control in Kansas.

It is already known that Kansas has a record that is currently much better than the national picture, that this death rate is 5 and the national figure is 11 per 100,000. It is also known that there are spots in this state that need improvement and, of more serious consequence, that the incidence of tuberculosis in Kansas appears to be rising.

Dr. Stocklen briefly reviewed the dramatic decline in the disease during the last hundred years. As a result of this success, apparently the public and the medical profession lost interest, which might have important repercussions. He recalled tuberculosis to be a cyclic disease and wondered if once again there will be a race of people susceptible to tuberculosis at a time when the germs are resistant to the drugs that are now used in its treatment.

This nation, and notably Kansas, is now at the crossroads where some decision must be made. The survey is designed to give the people of this state the facts so they can more intelligently elect the course they shall take in the future. The decision as well as knowledge of the present situation rests largely with the medical profession, so the doctor is the key to the survey and his cooperation is essential for its success.

Dr. Stocklen suggested they would like to know answers to questions like the following:

1. Where are the known active cases which are not hospitalized?
2. How many are under treatment?
3. Why are unhospitalized cases not hospitalized?
4. How many private physicians have patients under their care?
5. How can the tuberculosis control program best meet the needs?
6. What about hospitalization and follow-up measures?
7. What about the use of BCG?
8. Is tuberculin testing in order now that we have such a low morbidity and mortality rate?
9. What is being done in the rehabilitation of the tuberculosis patient?
10. How many recalcitrant patients are there?
11. Is more money needed at the sanatorium?

The Committee on Control of Tuberculosis met on August 7 and voted to cooperate with this survey. Sometime in the fall each member will receive a brief questionnaire. Your committee respectfully urges that each physician give the very few moments it will take to reply. This will be a major project of your committee during the coming year and its success, its value to the public, will be determined by the degree to which the practicing physician assists in providing the necessary information.

HEALTH AGENCIES

In the July *Northwest Medicine* an author stated that out of some 2,800 nationwide charities at least 80 are devoted to health. Each is dedicated to the relief of patients suffering from some condition or to eradicating the condition, or at least to educating the public about the condition. So each is serving a worthwhile purpose, each will gladly accept contributions, and each would possibly welcome an endorsement from organized medicine.

That, of course, means only the 80 health agencies. The other 2,720 will accept contributions but probably have less use for medical endorsements since their charities are not related directly to health. And yet who would say that CARE and many others in that classification have no bearing on health. So of course the boundaries are not well marked unless the name identifies their purpose. And there you have 80.

There are, for example, at least 12 on the subject of blindness, six on cancer, and a couple on leprosy. There is more than one charity that overlaps with others in names, even if this is not necessarily true of their services, as in the case of the National Council to Combat Blindness and the National Society for Prevention of Blindness.

Many have made themselves known in one way

or another. Perhaps the most surprising feature of the list is that there are so few strange names, which indicates at least that people are aware of their presence whether or not anything is known of their purpose. New to this writer are the Common Cold Foundation and the Foundation for the Study and Aid of the Emotionally Unstable Personality.

Perhaps these are newcomers, but we are glad they are among us even if their presence has previously been unknown. Medicine working without a lay agency has been handicapped in each of these fields, as can readily be seen by our lack of progress in conquering these most distressing conditions.

With some of the other health agencies now so apparently successful in their various tasks that they have nothing further to do, perhaps the public can really get behind a drive to conquer the common cold and to stabilize the unstable personality.

So give a dollar to spare humanity this untold suffering. Certainly the common cold contribution can be sent in care of your postmaster like so many similar donations. But the other, we don't know. Just mark your envelope UNSTABLE PERSONALITY, and perhaps we shouldn't tell you where to send it. Perhaps we shouldn't even think what we are thinking.

SOCIAL SECURITY REVISIONS

A bill to revise the Social Security law passed the House recently and will come up for consideration by the Senate in the next session. As on any controversial subject, many opinions have been expressed and many more will be heard before the Senate takes action. The matter is called to the attention of Kansas physicians now to give them an opportunity to discuss it with their senators who will be at home until Congress convenes in January.

An interpretation of the proposed revisions was carried in the *Chicago Daily News* on July 20 under the heading "Someone Must Pay," and was sent to the Kansas Medical Society by the American Medical Association. The editorial follows:

In a whooping anticipation of elections ahead, the House passed sweeping revisions in the Social Security law by a vote of 372-31. The bill now goes to the Senate where, we earnestly hope, an effort will be made to find out what the taxpayers are getting into.

As with all "welfare" legislation, it is not a pleasant task to quarrel with kindly, humane proposals. It is certainly true, as the House noted, that wives are quite often a few years younger than husbands. Hence it seems reasonable to lower from 65 to 62 the age at which women qualify for old-age annuities.

That way, a couple could have a more substantial income, perhaps enabling the husband to retire at 65 when he might otherwise be unable to do so. For widows and woman workers—although they live longer than men on the average—the lowered age can be justified on the basis of gallantry, equal treatment, or something.

The House legislation comes on the heels of administration-sponsored improvements last year, extending benefits and bringing coverage to some 10 million additional persons.

Barron's Weekly points out that in 1950, the Social Security system was paying an average of \$21 monthly to some 2.9 million persons. By June, 1954, payments were being made to 6.5 million individuals, at an average monthly rate of more than \$50.

Thus what started out as a modest program for a minimum pension of bare-sustenance proportions is mushrooming into a system promising a comfortable living for the retired, care for the disabled and dependent, and with increasing inequalities between contributions and benefits.

As we said, the advocate of caution in this progress has an ungrateful role, something like parading around the feast with a stomach pump. For who can gracefully oppose benefits for women at 62? Or 60? Or even 50? Who can argue that payments to disabled children or their widowed mothers should stop at age 18?

The fact remains, however, that these things cost money. The Social Security system is still young. It has a surplus of \$22 billion in its accounts—although the money is spent and what it has are government bonds. But the fund is piling up obligations faster than it is reserves, and sharply higher taxes for the system are already in the works.

One has only to look at the rates which private insurance companies charge for similar insurance, or deferred annuities, to realize what a tremendous "bargain" the Social Security system seems to be offering. To what extent this something-for-nothing offer is a fraud upon future taxpayers is a question that sorely needs an answer.

The House did not even hold hearings upon its bill to add \$2 billion a year to Social Security costs. The Senate indicates that it will not be similarly stampeded. It should not be.

The hard truth is that the government cannot pay money to one person without having previously taken it from him or some other person. The great popular appeal of Social Security, of course, rests upon the belief that somebody else is going to get the heavy end of the check.

This expectation could be illusory for so many millions of taxpayers that a sober estimate of how many billions the government is promising, and how it will

be paid for, is imperative before we go farther.

It would be unthinkable for some future Congress to renege on a contract sealed by the payment of taxes. But we also have no moral right to obligate future taxpayers to a burden that could become so great as to lower their own standard of living, while they pay for the generous but ill-advised impulses of their predecessors.

BOOKLETS FOR PATIENT EDUCATION

Answers to many questions in the minds of the public can be provided in the reception room of the doctor's office. There are many avenues of education, but still the most reliable information is that which comes from the medical profession itself. Lacking time to discuss the multiple subjects in which patients are interested, the doctor may still disseminate good ideas through the reading material he keeps in his reception room.

The American Medical Association publishes many pamphlets which are distributed to physicians without charge upon request. Those who have never read these leaflets will be surprised at the amount of information that is presented in an interesting manner for the layman.

The latest publication is a 12-page booklet entitled *To All My Patients*. In addition to discussing medical and hospital fees and health insurance, it tells the roles of various persons on the medical team in providing good medical care.

There are many others. Subjects such as *Quacks*, *On Guard*, *Health Today*, and *A Doctor for You* are but a few. The one called *Quacks* points out the danger of unscientific healing and tells of various methods used by different cultists. *On Guard* relates a brief description of the A.M.A.'s drug evaluation program. *Health Today* discusses medical progress over the past 50 years. *A Doctor for You* suggests ways for small communities to attract doctors.

These and many other pamphlets are available to physicians. They may be secured from the Kansas Medical Society or from the Department of Public Relations, American Medical Association, 535 North Dearborn Street, Chicago 10, Illinois.

The Middlesex County (Connecticut) Medical Association has issued a 16-page guide to community health services and is distributing it to residents with the help of the woman's auxiliary. The booklet describes the training and responsibilities of the family physician, encourages selection of a regular physician, outlines the association's 24-hour emergency phone system, and includes a roster of its members.

KANSANS ON NATIONAL COMMITTEES

Two Kansans, Dr. Clarence H. Benage of Pittsburg and Dr. George F. Gsell of Wichita, are now serving on national committees appointed by the American Medical Association to study important subjects. Dr. Benage is a member of the Committee on Nursing Service, and Dr. Gsell is one of a group which will review the functions of the Joint Commission on Accreditation of Hospitals.

Dr. Benage will work with seven others on the full committee. He is also a member of a sub-committee appointed to survey schools of nursing.

The committee on which Dr. Gsell is serving was formed after the House of Delegates, at its June meeting in Atlantic City, adopted the following recommendation: "Your Reference Committee recommends that the Speaker of the House of Delegates be requested to appoint a special committee to review the functions of the Joint Commission on Accreditation of Hospitals to consist of seven members, none of whom shall be members of the Council on Medical Education and Hospitals or of the Joint Commission on Accreditation of Hospitals. The special committee should be instructed to make an independent study or survey and report its findings and recommendations to the House at the next annual meeting. All physicians and hospitals are urged to pass on to this special committee any observations or suggestions concerning the functioning of the Joint Commission on Accreditation of Hospitals."

Both Kansas physicians will welcome opinions and suggestions from members of the Kansas Medical Society.

KANSAS CITY CLINICAL CONFERENCE

The annual conference of the Kansas City Southwest Clinical Society will be held at the Municipal Auditorium, Kansas City, Missouri, October 3-6. Fifteen guest participants will give lectures and conduct panel discussions and conferences. Television programs in color will depict operative clinics and clinical demonstrations. The Edward Holman Skinner memorial lecture will be given by Dr. Eugene P. Pendergrass, professor of radiology at the University of Pennsylvania.

Information and programs may be secured from the Society, 3036 Gillham Road, Kansas City 8, Missouri.

Annual grants to states for maternal and child health services, which started at \$3,624,000, now total \$11,927,700 for the fiscal year 1956.

Multiple Polyposis and Carcinomatosis

Tumor Conference

Edited by Bernard Klionsky, M.D.

Multiple polyposis with carcinomatosis is a most unusual condition and presents several interesting problems of differential diagnosis and of therapy.

Dr. Burger: The patient is a 28-year-old white man who was first admitted to the University of Kansas Medical Center three years ago. Three days before admission he had noted fever, malaise, and diarrhea. He was seen by his family doctor who treated him with paregoric; his condition did not improve. Following an increase in tenderness in the lower portion of his abdomen, he was admitted to the hospital.

He was examined by members of the hospital staff who agreed that he was acutely ill and that a laparotomy was indicated. An operation was performed at which the surgeon found a sealed-off perforation of the sigmoid colon. After a somewhat stormy postoperative course, he improved. He was examined with a sigmoidoscope, and many polyps were found within the rectum. He then had a barium enema which revealed multiple polyposis of the colon; there was something in the study which was suggestive of a carcinoma of the sigmoid. Following this he had a subtotal colectomy. The ileum was anastomosed to the distal portion of the sigmoid.

He returned one year later with a recurrence of tumor in the anterior abdominal wall. This was removed, and no further evidence of metastatic tumor was found. One year following this a rectal polyp was seen with a proctoscope and was removed surgically. The pathological diagnosis at that time was atypism with no evidence of tumor.

He returned again recently, having noticed a mass in the anterior abdominal wall beneath the old incision. This was thought to be a recurrence of the tumor. At laparotomy there were no metastases to the liver. However, the cul-de-sac, adjacent to the bladder, was crowded with tumor. Biopsy was done and was reported as metastatic carcinoma.

Dr. Goertz: These roentgenograms were taken on his original admission. There is marked narrowing in the sigmoid which is seen fairly clearly at the distal end. This is an air-contrast study which shows multiple polyps throughout the colon, and there is an area where there is a sharp cut-off (Figure 1). An

evacuation film doesn't show the polyps quite as accurately as the air study does.

These roentgenograms were taken in 1953 when he first came back with the metastatic nodule in his abdominal wall incision. Markers were taped directly over the nodule to see whether there was any direct relationship between it and the bowel.

Dr. Helwig: Was colectomy done on this individual?

Dr. Burger: It was. A subtotal colectomy was performed shortly after closure of the perforation of the sigmoid.

Dr. Helwig: The original growth was a rather classic low grade papillary type of adenocarcinoma. It produced a fair amount of mucus, as so often these colonic tumors do, and extended beneath the mucosa and almost through the bowel wall.

The biopsy of the non-infiltrating polyp shows a sharp transition from normal mucosa into this abnormal polyp. There is little loss of polarity of cells, but there are scattered foci of cellular atypia on the end of the polyp, as seen in many polyps. At this stage they are not true invasive malignant neoplasms.

We have here a rather classical story of multiple



Figure 1. Air contrast roentgenogram revealing multiple polyps throughout the colon and an area of constriction in the sigmoid colon.

Cancer teaching activities at the University of Kansas Medical Center are aided by grants from the National Cancer Institute, U. S. Public Health Service and the Kansas Division of the American Cancer Society. Dr. Klionsky is a Clinical Fellow of the American Cancer Society.

polyposis and of malignancy at an early age. It is typical of patients with polyposis that cancer does occur at an early age, as a rule many years earlier than most other multiple cancers. The youngest such patient I have observed was a boy of 14 who had four cancers in the colon with massive metastasis in the liver. There was no family history of polyposis; this is not uncommon.

Dr. Stowell: Dr. Friesen, will you discuss this case for us?

Dr. Friesen: This is a case of a young man with polyposis with malignant change. He was first seen at the age of 25. I think it is significant that his first symptoms were those of perforation. This is not the first patient I have seen who, in his 20's, presented with acute abdominal pain with perforation as the first symptom of carcinoma of the colon. This man, even though he has carcinomatosis, even now is a big strapping healthy-looking fellow who had not lost weight appreciably until just recently. It is very easy to become completely pessimistic about this situation of polyposis with malignant change. There are, however, a few patients who have apparently had their disease arrested. This patient had good surgical treatment early. A subtotal colectomy was done for polyposis and for the carcinoma. However, this man developed metastases and other polyps in the remaining rectum.

Dr. Stowell: Do you have any suggestions as to what one should do in cases of this kind, Dr. Friesen? When should one become radical, and how radical?

Dr. Friesen: Patients with true polyposis should have the colon removed. However, there is lots of discussion among surgeons in this country about whether one should leave the rectum in. This patient's rectum was left. Some surgeons would not only have done a total colectomy but would also have removed his rectum, leaving the patient with an ileostomy. An ileostomy is a very difficult thing with which to cope. I myself wouldn't want to live with such a drainage for a number of years, so I have felt that it is best to leave the rectum in and to fulgurate the polyps that remain in the rectum or as they develop. However, that management was carried out on this patient, and here he is now with carcinoma in the rectum and helpless. Perhaps if he had had a rectal excision at the time he had the colon excision he might not have carcinomatosis today. I think that is too difficult a question to answer, and chances are that he might then have had carcinoma in his lymph nodes as he does at the present time.

Dr. Stowell: When one finds a substantial number of polyps in an individual, what should be the therapy? Some might suggest watching the polyps

and having the patient come back for repeated observations.

Dr. Friesen: That is too dangerous. The incidence of cancer in multiple polyposis is so high that such patients must be treated immediately with at least a subtotal colectomy, or perhaps a total colectomy with removal of the rectum.

Dr. Helwig: You mean the minute the diagnosis is made, whether they have cancer or not? I think that is a very wise thing.

Dr. Friesen: Yes. Even though there is no cancer demonstrated I think this is certainly indicated.

Dr. Helwig: We studied a family in which a woman had familial polyposis. Her sister was examined by barium enema and proctoscopy and was found to have polyposis without any symptoms at all; but we did a total colectomy on her also because almost 100 per cent of such persons who live long enough get cancer.

Student: Was the rectum removed on this lady?

Dr. Helwig: No. She comes in at intervals, and if she has any polyps they are removed.

Student: How much would you raise the mortality rate by doing a total colectomy with removal of the rectum?

Dr. Friesen: I don't think the mortality rate would rise appreciably, but the morbidity rate would be markedly increased. In addition to increased technical difficulties imposed by a more extensive surgical procedure, there are problems relating to the ileostomy which is required. Many patients have dysfunction of the ileostomy, have difficulty in taking care of it, and suffer erosion of the skin. It presents a real problem. Many of the patients who have an ileostomy are doomed to a singularly lonely life. On the other hand there have been many recent improvements in the techniques of making and managing ileostomies. Many people get along quite satisfactorily.

Dr. Joffe: In the absence of a family history, how many polyps must you find before making the diagnosis of multiple polyposis?

Dr. Stowell: I was hoping someone would ask that question. I would like to hear some serious discussion of this question, because the presence of two or more polyps is not unusual in individuals with no history of familial polyposis.

Dr. Friesen: I think there must be two disease entities. There is the young person with hundreds of polyps; the older person, whom we see quite often with one, two, three, or four polyps, rarely has more than that. I think each polyp is as dangerous as the other.

Dr. Joffe: Do you offer colectomy to older individuals with a few polyps?

Dr. Friesen: No. If there is one polyp, it should

be removed locally via the sigmoidoscope or at laparotomy. One should of course make sure that the patient doesn't have a cancer and that the polyp is not malignant. If the polyp is malignant, that patient should be treated as if he had a malignancy. An appropriate partial colectomy should be done, at which time it should be determined whether there are more polyps. If there are more polyps, then I think that each of them should be removed and examined microscopically. If any one of them is malignant, an appropriate cancer operation should be done.

Dr. Stowell: This is perhaps of more interest to pathologists than to others. About a year ago Leuchtenberger¹ claimed to find inclusion bodies in polyps in the colon that are undergoing malignant change. It would be interesting to study the histologic material in a case of familial polyposis with that concept in view.

Dr. Friesen: Does this imply a viral origin?

Dr. Stowell: The author did not state that in her paper, but she mentioned the possibility in personal discussions.

Dr. Delp, would you care to comment on the disease condition of this case?

Dr. Delp: Patients with polyposis often have diarrhea which may be diagnosed as colitis for some time before its true cause is discovered. Investigation with barium enema or a sigmoidoscopic examination reveals the polyps. A continuous diarrhea makes one suspicious, but it can be relatively mild. It's of further interest because occasionally you find a patient with true ulcerative colitis who has a pseudo-polyposis, which can be demonstrated by x-ray. I suppose, by some surgical standards, there are suregons who would say that this is an indication for colectomy too. On the other hand, I think that this group of patients often gets by without surgery. If they have a remission, and this I have seen demonstrated in several cases, these pseudo-polyps will disappear completely.

Dr. Stowell: It is also interesting that some of these ulcerative conditions of the colon are associated with an increased incidence of carcinoma.

Dr. Pollak: Dr. Helwig, I have the impression that carcinoma of the colon, while extremely rare in the age groups of the 20's and early 30's, runs a particularly rapid course when it does occur in persons of that age group.

Dr. Helwig: That has been true in the cases I have followed. Of course one doesn't see many cases of this in a lifetime. I heard Dr. Wangenstein make a statement that he was strongly of the opinion that one should probably do total colectomies, perhaps in all cases of carcinoma of the colon, because of the rather significant incidence of polyps

elsewhere in the colon. I think that the incidence was about 10 per cent.

Dr. Friesen: That seems like rather extensive surgery for the additional polyps which may be present in the 10 per cent of patients with cancer of the colon. There is another way to discover the polyps. One can do a hemi-colectomy for the primary malignancy and ask the pathologist to open and examine the whole specimen before anastomosing or finishing the operation. If there is another polyp in this half of the colon, then one can look into the other half with a sigmoidoscope and examine carefully the entire mucosal surface. If there are no polyps, the other half need not be removed. Only about 10 per cent of patients with carcinoma of the colon have additional polyps. I think that this is not a high enough incidence to warrant a complete colectomy.

Dr. Helwig: I would like to ask Dr. Delp a question. The literature in the last three or four years has contained many discussions of the incidence of carcinoma as a complication of ulcerative colitis. Cancer of the colon has been said to be up to a hundred or a thousand times more frequent in patients with ulcerative colitis than in the general population. We believe that for some strange reason carcinoma in ulcerative colitis usually runs a rapidly fatal course. In your experience, what relationship is there between ulcerative colitis and carcinoma?

Dr. Delp: I have certainly noticed the definite more frequent development of carcinoma of the colon in patients with ulcerative colitis. I am not yet so concerned about that increase in incidence to suggest that total colectomy is the treatment of choice in ulcerative colitis.

Dr. Stowell: This certainly is an interesting case of a rare condition which, among other things, illustrates a possibility at least of prevention of cancer. It remains a moot point as to how much one can accomplish by prophylactic removal of polyps.

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COPIES OF HIPPOCRATIC OATH AVAILABLE

The A.M.A. announces that two-color offset reproductions of the Hippocratic Oath are available from its Order Department at \$1.00 each. Printed on parchment stock, the reproduction measures 11 $\frac{3}{4}$ by 15 $\frac{1}{4}$ inches and is suitable for framing. Many physicians are placing copies of the oath in their offices and waiting rooms.

ACTIVITIES OF MEMBERS

Dr. D. Cramer Reed, who recently completed a residency in urology at the Medical College of Virginia, has returned to Wichita and is now associated in practice with Dr. H. F. O'Donnell and Dr. William H. Browning.

Three Kansas physicians, Dr. Walter Furst of Norton, Dr. Benjamin Matassarini of Wichita, and Dr. L. E. Peckenschneider of Halstead, recently received fellowship certificates from the American College of Chest Physicians.

Dr. Ralph H. Major, professor emeritus of the history of medicine at the University of Kansas Medical Center, contributed the article on "Diagnosis" to the 1955 edition of the *Encyclopedia Britannica*.

Dr. Franklin D. Murphy, chancellor of the University of Kansas, received an honorary Doctor of Science degree from the University of Pennsylvania in June at the university's 199th annual commencement exercises.

Dr. S. A. Scimeca, who formerly practiced in Caney and has recently been practicing in St. John, has returned to Caney to re-establish his practice there.

Dr. James G. Stewart, Topeka, was recently elected president of the Shawnee Guidance Center board of directors.

The Gelvin-Haughey Clinic, Concordia, announces that Dr. Foxhall P. Thornton, Jr., is now a member of its staff. Dr. Thornton is a graduate of the University of Virginia Department of Medicine and, after his internship at Boston City Hospital, served a residency in internal medicine at the University of Virginia Hospital and a residency in gastroenterology at the VA Hospital in Richmond, Virginia.

Dr. Gerhart R. Tonn, who has been serving a tour of duty with the military forces, has returned to his civilian practice in Wichita.

Dr. C. Frederick Kittle, assistant professor of surgery at the University of Kansas Medical Center, was

recently elected to membership in the North American Chapter of the International Society of Angiology.

Dr. Girard Veenschoten, who has been practicing at Jetmore since 1952, recently moved to Hesperia, Michigan, to practice there.

DEATH NOTICES

SETH A. HAMMEL, M.D.

Dr. Seth A. Hammel, 76, an active member of the Shawnee County Society, died at a Topeka hospital on July 28. A native Topekan, Dr. Hammel opened an office in the city in 1905, after graduation from the University of Illinois College of Medicine and internship at Chicago Polyclinic Hospital. He also was an instructor at the Kansas Medical School, Topeka.

At the beginning of World War I, Dr. Hammel organized a field hospital unit and commanded that company. On his return from service he became state surgeon for the Kansas National Guard, and during World War II he was medical officer for Kansas Selective Service.

CHARLES WILLARD LONGENECKER, M.D.

Dr. C. W. Longenecker, 83, who had practiced in Kingman more than 40 years, died there on August 6 after an illness of four years. Dr. Longenecker was graduated from Kansas City Medical College in 1899. During his active years in practice, he specialized in eye, ear, nose, and throat work. He formerly was an active member of the Kingman County Medical Society and since 1941 had been an honorary member of the group.

JAMES HARLAN ADAMS, M.D.

Dr. J. H. Adams, 80, a member of the Sedgwick County Medical Society, died at his home in Wichita on August 17. He was graduated from the Southwest School of Medicine, Kansas City, Missouri, in 1914 and immediately began practice in Wichita, specializing in anesthesiology. He was a member of the American Society of Anesthesiologists, Inc.

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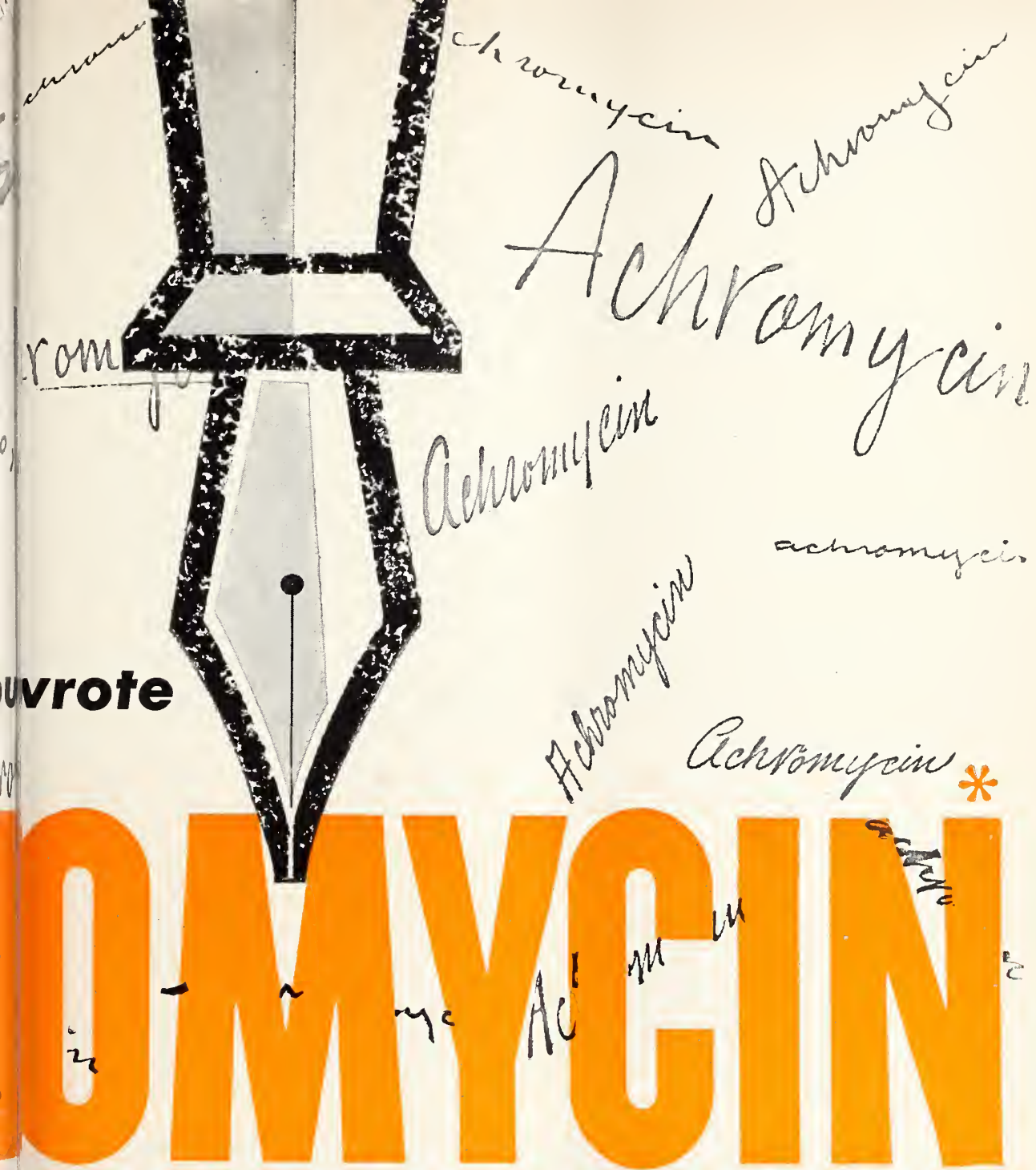
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Dr. Noble P. Sherwood, professor emeritus of bacteriology at the University of Kansas, Lawrence, has accepted a position as visiting professor of microbiology at the University of Indonesia School of Medicine, Djakarta, Java. He will leave in October and will have a short period of indoctrination at the University of California, Berkeley.

Dr. R. L. Drake, Dr. Bert E. Stofer, and Dr. L. E. Vin Zant, Wichita, are authors of a paper, "Ectopic Pinealoma," published in the July issue of *Neurology*.

At an organizational meeting of the Sedgwick County Chapter of the American Diabetic Association held June 29, the following Wichita physicians were elected to office: president, Dr. John L. Kleinheksel; vice-president, Dr. Benjamin M. Matassarini; secretary, Dr. Gary B. Wood, and treasurer, Dr. Ruth Page.

Dr. Clayton T. Ralls, Winfield, who has been engaged in practice there for 50 years, was guest of honor at a dinner given by the Winfield Academy of Medicine on July 28. At that time the Cowley County Medical Society presented him with an engraved 50-year key.

Dr. Melvin V. Holman, Wichita, has enrolled for a year's postgraduate work in anesthesiology at the University of Kansas School of Medicine.

Dr. Thomas G. Orr, Sr., professor emeritus of surgery at the University of Kansas School of Medicine, received an honorary Doctor of Science degree from the University of Missouri at its annual graduation ceremonies.

Dr. Ernest E. Harvey, Salina, has resigned as health officer for Saline County. A plan for a city-county health department has been adopted there, and Dr. Howard Wagenblast, who recently received a master's degree in public health from the University of California, has been employed as director. Dr. Wagenblast formerly held public health positions in Wichita and Lawrence.

The Axtell Clinic, Newton, announces that Dr. Charles Isaac is now a member of its staff and will specialize in urology. Dr. Isaac, son of Dr. Arnold G. Isaac, recently completed a three-year residency at the University of Kansas Medical Center. His wife, Dr. Anita Isaac, will announce plans later to practice in Newton.

Dr. William A. Nixon, who will leave soon to begin study at the University of Pennsylvania Graduate School of Medicine, was honored by 500 residents of Macksville at a community dinner on July 29.

Dr. Robert W. Blackburn, Council Grove, announces that Dr. James H. Davis is now associated with him in practice. Dr. Davis, a graduate of the University of Kansas School of Medicine, recently completed internship at George Washington University Hospitals, Washington, D. C. He will spend three afternoons each week at an office in Alta Vista.

Dr. Edward D. Greenwood, of the Menninger Foundation, Topeka, was an official member of the United States delegation to the first United Nations Conference on the Prevention of Crime and Treatment of Offenders, held in Geneva in late August and early September. He then went to Denmark to participate in a session of the International Union for Child Welfare.

Dr. George E. Burket, Kingman, went to Boston last month to enroll for a postgraduate course in surgery at Harvard Medical Center. He will complete the work next June.

Dr. Bartlett W. Ramsey, who was recently released from the service after two years at Walter Reed Hospital, is now practicing at the Topeka Medical Center in association with Dr. B. I. Krehbiel. Dr. Ramsey was graduated from the University of Kansas School of Medicine and served his internship and residency in pediatrics at the University of Kansas Medical Center.

Dr. Leo K. Crumpacker, Wichita, addressed the Rotary Club in El Dorado in August on the subject of cancer research and treatment. Dr. Ralph J. Metcalf, El Dorado, was Rotarian of the Day.

PROGRESS IN TREATMENT OF CHILDREN

Twenty years of progress in the treatment of children by public and private agencies concerned with child health and welfare are reviewed in the July-August issue of *Children*, a publication of the Children's Bureau. The issue was prepared as part of the observance of the 20th anniversary of the passage of the Social Security Act on August 14, 1935. Copies may be secured for 25 cents from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

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TYPES OF MOVEMENT WITHIN THE BOWEL



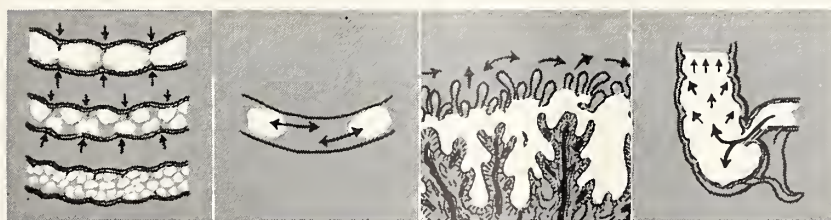
Food Breakdown

Pyloric Dilation

Duodenal Churning

Spiral Propulsion

Rapid: Slow Peristalsis



Kneading Action

Pendulous Movement

Villi Mixing

Ileocecal Dilation

SEARLE

THE MONTH IN WASHINGTON

Editor's Note. The following summary of Washington news was prepared by the Washington office of the A.M.A. for distribution to state and regional medical journals.

Although very little health legislation actually was enacted in the first session of the 84th Congress, a number of important bills made enough progress to insure they will get serious consideration when the second session starts next January.

Foremost is a bill to amend the social security act, and, among other things provide OASI payments for disabled workers after age 50. The present provision (enacted in 1954) protects a disabled worker's pension so it is not decreased because of his years of unemployment, but payments don't begin until he reaches 65.

The new plan, sponsored by Democratic members of the House Ways and Means Committee, was rolled through the House after closed committee hearings. But when it got to the Senate, Chairman Harry Byrd of the Finance Committee held it up, saying it was too important to be reported out without the complete hearings he plans for next session.

The American Medical Association is flatly opposed to cash disability insurance. One important reason is the association's conviction that federal machinery necessary to regulate disability examinations inevitably would project the government into the medical care field. There are many other reasons, including the relationship between cash payments for disability and the patient's interest in rehabilitation. The issue of disability pensions will be settled next year in the Byrd committee or on the Senate floor.

A bill for \$90 million in grants for building and equipping non-federal research facilities passed the Senate and is awaiting action in the House Interstate and Foreign Commerce Committee. Hearings have been held on a bill for U. S. grants to medical schools and on another (Jenkins-Keogh) to allow self-employed persons to defer income tax payments on part of their income put into annuities.

Other bills that will be ready for action in January include legislation to stimulate nursing education, improve the medical care of military dependents, authorize health insurance for government workers, authorize U. S. guarantee of mortgages on health facilities, and offer military medical scholarships. The administration's bill for reinsuring health insurance plans by now is a little shopworn, but it still might be pushed again next year.

President Eisenhower has made it known he wants Congress to get to work on health legislation early next session. His urging might not be needed. Next year is a presidential election year, and both parties will exert themselves to enact, and take credit for, new health programs that carry public appeal.

Despite the hundreds of hours of hearings in Senate and House, not a single important permanent medical program was set up by Congress in the last session. A national mental health survey, supported by the A.M.A., was enacted, but the administration's plan for mental health grants will be up for action next year.

Ignoring protests of physicians and dentists, Congress extended the doctor draft act for another two years, after first adopting two amendments. It exempted all men over 45, and all 35 or older who previously had been rejected for medical commissions for physical reasons alone.

For almost four months Congressional committees pondered what to do about Salk poliomyelitis vaccine. At first there were two main questions: (1) How much money should Congress spend to buy vaccine for free shots, and who should get them? (2) How far should the federal government move into the picture to insure equitable allocation?

One of the proposals—this even got through the Senate—was to offer unlimited money to the states, which in turn could give free shots to any persons or group of persons under age 20. President Eisenhower's idea—which he urged on Congress several times—was simply to insure that no person in need of the vaccine would go without it for financial reasons. Eventually his view prevailed, and the states now are drawing on a \$30 million fund. This law expires next February 15.

As weeks passed, there was less and less enthusiasm for setting up a federal allocation system, which Secretary Hobby and Surgeon General Scheele repeatedly told Congress wasn't needed. Consequently, when the National Foundation announced it had all the vaccine it needed for its program, a voluntary allocation plan was put in effect. The plan has the support and cooperation of physicians, pharmacists, drug manufacturers, and the state health officers. The Department of Health, Education, and Welfare is the liaison between the pharmaceutical houses and the states, dividing the vaccine on the basis of the number of unvaccinated persons in the eligible age groups.

U. S. Savings Bonds have been sold since March 1, 1935. The investing public called them "baby bonds" until the E bond was introduced as the Defense Savings Bond on May 1, 1941. Today over \$38 billion in series E and H Savings Bonds are owned by around 45 million individuals in this country.

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1. Rosenberg, S. and Oster, K. A., "Gelatine in the Treatment of Brittle Nails," *Conn. State Med. J.* 19:171-179, March 1955.
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TRUDEAU SOCIETY SCIENTIFIC MEETING

The Kansas Trudeau Society will sponsor an all-day scientific session at the Hotel Kansan, Topeka, on Thursday, September 29. A short period of time after the morning program will be devoted to a business meeting, after which there will be a luncheon. The day will be concluded with a joint dinner session with the Kansas Tuberculosis and Health Association.

Dr. C. Frederick Kittle, University of Kansas School of Medicine, will be chairman of the morning session, beginning at 9:00 o'clock. Speakers will be Dr. Alfred M. Tocker, Wichita; Dr. Hector W. Benoit, Jr., Kansas City, Missouri; Dr. Frank A. Mantz, Jr., University of Kansas School of Medicine; Dr. Morgan Berthrong, Colorado Springs; Dr. Robert M. Brooker, Dr. George Zubowicz, and Dr. Andre Baude, Topeka.

Dr. Charles Pokorny, Halstead, president of the organization, will preside at the business meeting. Dr. Monti L. Belot, Lawrence, will be chairman of the luncheon meeting.

In the afternoon Dr. Ann Pollak, University of Kansas School of Medicine, will be chairman. Dr. Joseph D. Aronson, of the University of Pennsylvania, will speak on "The Role of BCG Vaccination in the Control of Tuberculosis," and Dr. David B. Radner, Chicago Medical School, will discuss "Tuberculosis among BCG Vaccinated Medical Students." A clinical and x-ray conference will follow.

Dr. Ralph I. Canuteson, Lawrence, will preside at the dinner session, and Dr. Joseph B. Stocklen, Cleveland, will deliver an address, "The Changing Order in the Field of Health."

RESEARCH GRANTS RENEWED

Several grants to members of the staff of the department of pathology and oncology at the University of Kansas Medical Center have recently been renewed, covering a total of \$53,650 for various projects.

Dr. J. David Robertson has received a grant of \$8,150 from the United States Public Health Service for studies of the ultrastructure of the synapse. From the same source Dr. Harold Edelhoeh has received \$6,500 for studying non-specific factors in macromolecular interactions, and Dr. H. Adrain Stahl has received \$6,000 for research on vacuum ultraviolet microspectrophotometry.

Dr. Ann Pollak and Dr. Victor Buhler have a renewal of a grant of \$7,000 for their study on the pathogenicity of cultural characteristics and antibiotic sensitivity of atypical acid-fast organisms.

The Atomic Energy Commission has granted the

department \$25,000 for cytochemical studies of irradiation ischemia and chemical agents on mammalian tissues. That project is supervised by Dr. Max Berenbom.

Dr. Joseph F. Miglairese, working under a grant from the American Cancer Society, received a renewal of his research fellowship, guided by Dr. Robert E. Stowell and Dr. Chauncey G. Bly.

OKLAHOMA CITY CLINICAL CONFERENCE


The Oklahoma City Clinical Society, organized in 1930, will hold its 25th annual four-day conference, October 24-27, and is extending an invitation to attend to all members of the Kansas Medical Society. Headquarters will be at the Biltmore Hotel, Oklahoma City.

The program will include presentations by 16 distinguished guest speakers, listed in an advertisement on Page 523 of this issue. Dr. Elmer Hess, president of the American Medical Association, will give the banquet address on October 24. Daily luncheon question and answer sessions and a clinicopathologic conference will also be features. Social events will include dinner meetings, a dinner dance, and a stag smoker.

UROLOGIC SOCIETY PROGRAMS

The Kansas City Urologic Society announces programs for seven meetings to be held during the 1955-1956 season at the Pine Room, Union Station, Kansas City, Missouri. Following is the list: September 28, "Kidney Transplants," Dr. R. W. Stockton and Dr. George Aaron, Kansas City, Missouri; October 26, "Uretero-Pelvic Obstructions," Dr. Walter Mau and Dr. James A. McClure, Topeka; November 30, "Experience with the Johanson Procedure," Dr. James Cope, Columbia, Missouri, and Dr. Robert B. Bristow, St. Joseph, Missouri; January 25, "Hemoglobinuric Nephrosis," Dr. Lawrence C. Johnson, Kansas City, Missouri, and Dr. Herbert Warren, St. Joseph, Missouri; February 22, "Tuberculosis of the Kidney," Dr. Ronald W. Stitt, Kansas City, and Dr. Ira T. Smith, Kansas City, Missouri; March 28, guest speaker for urological seminar; April 25, "Endoscopic Extraction of Ureteral Calculi," Dr. James F. O'Malley and Dr. Stoughton F. White, Kansas City, Missouri.

The ninth clinical meeting of the A.M.A. will be held in Boston, November 29 through December 2, 1955. Hotel reservations may be made through Chairman, A.M.A. Housing Committee, 80 Federal Street, Boston 10, Massachusetts.



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Trypsin in the Treatment of Venous Thrombosis

Victor M. Eddy, M.D.

Kansas City, Kansas

During the last 10 years, accounts concerning the use of trypsin as a therapeutic agent have been seen in the literature with increasing frequency. Over this period, trypsin has been evaluated in many disease entities with venous thrombosis receiving considerable attention. Though much work has been done and much accomplished in understanding the nature of this drug as a therapeutic agent, investigators are not in agreement on its effect on venous thrombosis.

Efforts to understand the action of trypsin in the treatment of venous thrombosis have implicated it in the various mechanisms of clot formation, clot lysis, formation of thrombi, and basic enzymatic mechanisms, many aspects of which are still poorly understood. Conflicting terminology and experimental results have complicated the picture and have led to a considerable amount of confusion concerning its effectiveness. Therefore, an attempt will be made in this paper to survey the background and the experimental and clinical impressions of those interested in this subject. Finally, the possible future use of trypsin in venous thrombosis will be presented.

EARLY CLINICAL AND EXPERIMENTAL INVESTIGATION

Trypsin was known as early as 1836⁴⁸ and was given its name "trypsin" by Khune in 1867.³⁰ A crude extract of the pancreas was used as the source of trypsin in the early 1900's when Lewis injected the extract subcutaneously in an area of diseased tissue. He observed that this extract seemed to cause a severe reaction with the diseased tissue while no reaction seemed to take place in the surrounding healthy tissue.

Bätzner³ used the extract topically and intravenously on soft tissue tubercular abscesses, and tuberculosis of the bones, joints, and lymph nodes.

It has also been used to some extent in attempts to dissolve fibrinous adhesions of the lung and thick, tenacious bronchial secretions.

Ever since the days of the earliest descriptions of enzymes and the clotting mechanisms of the blood, trypsin has been closely associated with blood clotting. Consequently, a wide variety of terms arose to describe the association of trypsin to the normally occurring lytic factor of the blood. Such terms as

"serum trypsin," "serum trypsin inhibitor," "serum protease," and "soybean trypsin inhibitor," are all frequently seen and implicate trypsin in the clotting mechanism.

Early experimental investigation of the so-called "lytic system" of the blood has given some information on the action of trypsin as well as to the reasons for associating trypsin to this factor in the past.

In 1838, it was observed that fibrin clots would lyse spontaneously.¹⁰ A similar action was observed in cases of sudden death⁴² where blood was found to be incoagulable. This was also found in cases of peptone and hepatic shock⁴³ and in patients with hemolytic staphylococcus infections.⁵⁷ When efforts were made to identify the nature of the fibrinolytic substance, it was subsequently found that serum with chloroform added accelerated fibrin clot lysis.⁹ It was thought by Dastre⁹ that this represented the presence of an enzyme in serum which chloroform activated and which he termed "fibrinolysin." This action was also found to be a property of trypsin, but the whole situation was further complicated by finding that both substances would also clot oxalated blood.^{11, 23, 40, 43}

In 1893 and 1897, Hildebrant and Hahn and others demonstrated that normal serum could inhibit the proteolytic activity of trypsin.^{5, 21, 22, 35} Others obtained a pancreatic extract which would also inhibit the lytic action of trypsin.⁵⁹ Subsequently, numerous investigators were able to find antitryptic and antifibrinolytic factors in many tissues and in the albumin fraction of serum. These substances were subsequently called "serum trypsin" and "serum trypsin inhibitors" by several investigators.^{24, 44, 51}

In the early 1930's, investigators began to suspect that other enzymes might be responsible for these actions. It was found by Mole⁴¹ that the lytic factor was present even after the pancreas was removed. Other works substantiated that, although the lytic factor of normal serum closely resembled trypsin, it was apparently another enzyme which was responsible for these actions.^{13, 29, 54}

In 1945, Christensen and McLeod⁶ proposed the terms "plasmin" for the lytic factor, "plasminogen" for its precursor, and "antiplasmin" for its inhibitor. They also suggested that "plasmin" should replace the previous terms of "serum trypsin," "serum protease," "fibrinolysin," "serum tryptase," and "thrombolytin." They further stated that the effects of lysis,

This is one of 11 theses, written by fourth year students at the University of Kansas School of Medicine, selected for publication by the Editorial Board from a group judged to be the best, by the faculty at the school. Dr. Eddy is now serving his internship at the University of Kansas Medical Center.

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such as occurred in sudden death, peptone and hepatic shock, chloroform, and stress were also due to plasmin activity. These workers also felt that "antiplasmin" should be substituted for the terms "crystalline antitrypsin" and its activity analogous to that observed with soybean trypsin inhibitor, and heparin. This terminology has been re-emphasized in the transactions of the first conference on blood clotting and allied problems.⁴

Various attempts have been made to explain the apparent dual role of trypsin and the related enzyme plasmin in clot formation and clot lysis. It was initially thought that their action was against the antitrypsin or antiplasmin factor. Others postulated that the crude or impure trypsin, used in early experiments, contained enough Ca^{++} to account for its ability to clot oxalated plasma.³⁹ Some thought that by enzymatic action trypsin would hydrolyze fibrinogen to thrombin.⁶⁰ Lenggenhagen³⁵ thought that the clotting ability could not be demonstrated in serum which was in motion, and that trypsin and plasmin were capable of obtaining Ca^{++} from another source, such as protein bound calcium, which was necessary for the clotting action of these substances.

Another group, accepting the dual role of trypsin, attempted to show that plasmin or a similar proteolytic enzyme was a normal component of the clotting mechanism. Douglas and Colebrook¹¹ tended toward this when they showed that small amounts of trypsin accelerated clotting whereas large amounts seemed to cause lysis. This has been confirmed by Ferguson and Erickson¹⁶ and was further advanced by Eagle and Harris,¹³ who felt both processes went on simultaneously. They further showed that the total amount of thrombin formed with trypsin amounted to only one-fifth to one-half that formed by prothrombin. This has indicated that trypsin acts in the clotting mechanism at the prothrombin level rather than at the thrombin-fibrinogen level. Several others have supported this work.^{8, 55}

In more recent years, there appears to be a trend toward favoring the theory that a normally occurring proteolytic enzyme "plasmin," similar to trypsin, is a component of the blood clotting mechanism.^{14, 15, 35} More recently, efforts have been directed toward showing plasmin to be a normal component of thromboplastin. This theory will be offered in some detail later.

PHARMACOLOGY AND PHYSIOLOGY

Distribution: It is generally accepted that trypsin is present in an inactive form in the pancreas of the normal individual and is present in the active state in the intestine and feces. The exact site at which the transformation from the inactive to the active state occurs is still argued, but it is generally re-

garded to be at some point in the pancreatic duct or small intestine. Trypsin is usually considered to be excluded from the circulation in the normal individual, but some feel that it may gain access to this media in certain pathological states, such as acute or chronic pancreatitis.^{1, 12} This has also been inferred, through the work of some who have investigated the incidence of vascular clotting, in cases of carcinoma of the body and tail of the pancreas.⁵³

Various investigators have been able to demonstrate the presence of antitryptic, or more correct, antiplasmin substances in the extracts of different organs. Those tissues having the greatest antitryptic levels are the spleen,⁵⁸ the pancreas,⁴⁴ and the blood plasma and cells.^{20, 55} Evidence of antitryptic activity in a wide variety of tissues has been used to explain the inability of trypsin to digest the gastrointestinal tract. This concept has also been used to explain the reaction observed in the early use of trypsin on diseased or dead tissue while the inhibitor apparently protected the healthy tissue.

Though trypsin is normally localized in distribution, it is possible that in certain pathological states it may gain access to the general circulation and may explain the hemorrhagic state which is generally associated with acute pancreatitis. Innerfield²⁷ has used an "antithrombin test" in the diagnosis of early or obscure pancreatitis and feels that this test demonstrates increased activity of the lytic system. However, he does not state that his test is evidence that trypsin is present in the circulation but rather some substance similar to it is stimulated or freed from its inhibitor in this disease. The substance is probably plasmin.

SITE AND MODE OF ACTION

I. Clotting Mechanisms: During its history, trypsin was implicated in several mechanisms which are important in considering its use in the treatment of venous thrombosis. This has been further complicated because the mechanisms of lysis and clotting are not fully understood either separately or in relation to one another.

Its site of action has been fairly well limited to the prothrombin level in the clotting mechanism, but whether its action is primarily lytic, coagulative, or some of both is purely speculative. These three different ideas will be briefly summarized.

Those workers who feel that the ability of trypsin to clot oxalated blood is a primary action, state that the action is at the prothrombin level. Trypsin then exerts its action by combining with prothrombin or accelerating its conversion to thrombin. (Figure 1). Support of this view has been reported by several workers,^{13, 53, 54} and additional support may be inferred from Taylor, Overman, and Wright,⁵⁶ who

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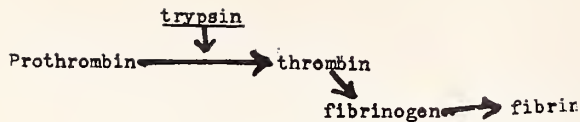
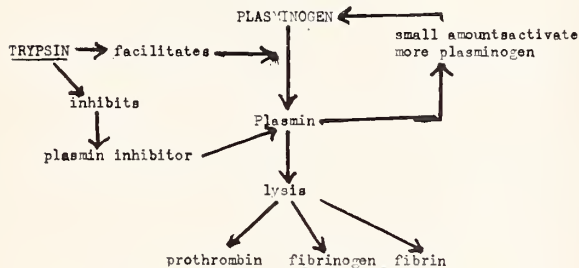


Figure 1

state that the use of coumarin derivatives will inhibit the clotting effect of trypsin.

Another group apparently feels that trypsin is primarily a lytic factor, and they fix the site of its action either on the so-called "lytic system" of the blood or directly on the various factors of the clotting mechanism (Figure 2). This concept, that trypsin

Figure 2. Adapted from Kochlaty, Ellis, and Jensen.³¹

sin enters into the plasmin system, has been supported by Lewis and Ferguson,³⁶ Peck,⁴⁷ Agress,² and Innerfield.²⁸ The direct action of lysing prothrombin, fibrinogen, and fibrin has been advocated by Roettig⁵⁰ and Madden,³⁷ but seems to place the primary site of action below the prothrombin level. This, however, may well be the secondary site of action.

Finally, there are those who endeavor to explain both the lysis and clotting as primary actions of trypsin. This has come about through inference that since both actions are prone to occur, a proteolytic enzyme is probably a normal component of the clotting mechanism. Since, however, trypsin closely resembles this enzyme (plasmin), its primary action is probably one of influencing blood clotting. Certain workers have gathered considerable evidence to advance this theory,^{16, 18, 38, 56} and it appears to represent the present trend concerning the primary action of trypsin.

The advocates of this theory feel that thromboplastin is composed of a lipid-enzyme complex. The lipid has the action of the enzyme inhibitor (antiplasmin), while the active component of thromboplastin is the enzyme (plasmin). It is proposed that trypsin primarily interferes in the lipid enzyme complex, serving in effect to remove, or inhibit, the lipid portion of thromboplastin. By this mechanism, these workers feel that high levels of trypsin are necessary to abolish the inhibitor before a sufficient amount of trypsin will be present to exert its secondary lytic

effect on the other clotting mechanisms such as fibrinogen, prothrombin, and fibrin. Clinical and experimental evidence seems to bear this out. Work with anticoagulants, heparin and coumarin derivatives, has been shown to inhibit the clotting action of trypsin, and therefore some have advocated their use in the form of an adjuvant to therapy with trypsin.

It has also been supported by finding that soybean trypsin inhibitor and antiplasmin extracts from various tissues can cause coagulation as well as inhibit the lytic action of trypsin. This mechanism may also serve to explain the phenomenon of clotting followed by lysis which is observed in vitro, as well as the difference in effects produced by large and small doses of trypsin. And, finally, it may be used to explain the apparent ineffectiveness of trypsin in lysing clots in vivo. That is, not until a high enough level is reached to overcome the inhibitor does lysis occur, and this level is sufficient to cause lysis not only of fibrin but also other proteins of the serum in such a rapid manner that shock and death follow.

This concept has been diagrammed in Figure 3. Whether Ca^{++} has been excluded from the mechanism of clotting by this theory still poses somewhat of a problem. Some investigators feel that more pure trypsin would exclude it, while others feel that the enzyme is capable of obtaining Ca^{++} from some other source (protein bound Ca^{++}), still making Ca^{++} and tissue factors necessary for clotting.

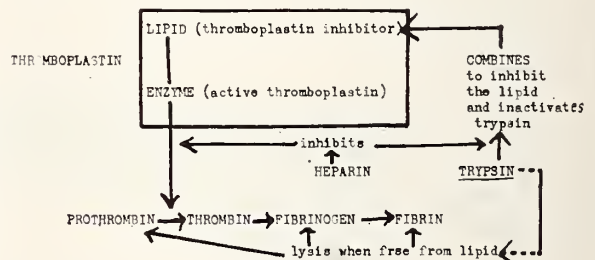


Figure 3.

II. *On Preformed Thrombi in Vivo*: The mechanism involved in the production of thrombi, like blood clotting, is not well understood. However, the clotting mechanism is regarded as necessary at some point in the formation of thrombi and has long been implicated as one of the various etiological factors of intravenous thrombosis.

Efforts to establish the effect of trypsin on thrombi produced in vivo have largely been done by introducing thrombin into the veins and arteries of animals and studying the effect of trypsin on the thrombi produced. Opinions on the effectiveness of trypsin on these preformed thrombi are varied. Some investigators feel that the thrombi are definitely lysed.

Meat...

and Biologic Facts of Protein Metabolism

The classical work of Cannon and his associates* in the field of protein metabolism has contributed significantly to our knowledge of the biologic utilization of protein. It has established that the dietary absence of a single amino acid quickly changes the direction of metabolic activity from anabolism to catabolism. Apparently all the nonessential amino acids play some part in sparing the essential amino acids, and all may be regarded as indispensable for optimal nutrition. It has been suggested "that for maximal tissue-utilization of amino acids at least twenty per cent of the total dietary nitrogen should come from other sources than essential amino acids."

In undernourished subjects the maintenance requirement for each essential amino acid is much greater—two to almost five times greater—than in healthy subjects.

Although an optimal caloric intake facilitates optimal utilization of amino acids, a reducing regimen need not curtail full utilization of these nutrients. It has been shown that a useful degree of amino acid utilization can be attained with caloric intake considerably below the optimal.

Minerals appear to be important in the process of amino acid metabolism. Evidence indicates that either phosphate or potassium deficiency might adversely influence amino acid utilization. Absence of either ion from experimental depletion rations leads to depression of appetite and slowing of the processes of protein repletion.

B complex vitamins also affect the metabolism of proteins and amino acids. For example, rats fed a high protein diet require a high intake of B complex vitamins in order to maintain normal growth rates. Omission from the ration of any one of these vitamins (riboflavin, thiamine, pyridoxine, or pantothenate) is accompanied, in varying degrees, by lower food consumption and slower weight gain.

Meat of all cuts and kinds is high in its content of protein, and provides well proportioned amounts of essential and nonessential amino acids. Meat also supplies valuable amounts of essential minerals, especially iron, phosphorus, potassium and magnesium, as well as important quantities of all components of the vitamin B complex, thus assuring maximal utilization of the amino acid components.

*Cannon, P. R.; Frazier, L. E., and Hughes, R. H.: Factors Influencing Amino Acid Utilization in Tissue Protein Synthesis, in Symposium on Protein Metabolism, New York, The National Vitamin Foundation, Inc., 1954, pp. 55-90.

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Others believe that the thrombus is altered in such a manner that complete occlusion will not occur. Still others believe that trypsin has no effect on thrombi produced in this manner.

Curiously enough, complications of thrombosis at the infusion site have been experienced in many cases, and a few investigators report instances of generalized intravascular thrombosis following intravenous infusion of trypsin. This action then appears to closely parallel that which occurs *in vitro*.

Innerfield, Angrist, and Schwartz²⁵ felt that lysis of thrombi in animals could only be demonstrated at levels which also produce shock. Their conception was that a high enough serum level of trypsin to lyse could not be achieved until the excess and rapidly formed inhibitor was inactivated by combination with trypsin. Only then could trypsin exert its lytic action on the thrombi.

Laufman and Roach³⁴ used trypsin both before and after producing the thrombus and found that the thrombus could be prevented if treatment was started before the thrombus was produced; but, when used after the thrombus was present, trypsin had very little lytic effect.

Agress and others² used intravenous trypsin in experimental coronary thrombosis in dogs. Their conclusion was that there may be some lytic action on the thrombus as trypsin seemed to prevent the complete occlusion which was observed in control dogs.

Tagnon⁵⁴ and Taylor, Overman, and Wright,⁵⁶ working with rabbits, found that trypsin could cause massive intravenous thrombosis. In the case of Tagnon, the rate of infusion was cited as the immediate cause. These workers state the trypsin given intravenously in 10 to 15 seconds resulted in a clinical picture of shock and death of all animals. Autopsy showing intravenous thrombi as the cause was found in most instances. When rabbits were given the same or larger dose, but over a longer period (one-fourth to one hour), no deaths occurred.

On the contrary, Taylor *et al.* felt that rapid administration of large doses could cause shock, but that a slower rate of infusion seemed to increase the instance of infusion site thrombosis. In their series of 10 rabbits, they report a mortality of 40 per cent with a 35 per cent incidence of local thrombosis at the infusion site. They noted no thrombolytic effect and in some cases thought that there was propagation of the primary thrombus. These workers further state that 90 per cent of the animals dying in early infusion showed intraventricular thrombosis, thrombosis of large veins and arteries, and pulmonary and myocardial hemorrhage.

Dragstedt and Wells,¹² Silva,⁴⁹ and Innerfield²⁶ have stated that the picture of shock which can be produced by trypsin closely resembles anaphylactic

shock and the shock occurring in acute pancreatitis. Dragstedt and others state that the liver in such animals shows an increase in the histamine content and postulate that trypsin or proteolytic enzymes may play a role in histamine release. In their studies, they could prevent the shock with antihistaminics. Innerfield postulated that the shock was the result of digestive products produced by lysis of all components of the clotting mechanism. The preceding work may have elucidated the mechanism responsible for the shock produced by trypsin.

FATE AND EXCRETION

Most observers believe that trypsin is inactivated quite rapidly by combination with its inhibitor. Kunitz³² states that approximately 98 to 99 per cent of the administered trypsin, regardless of dose, became bound to the inhibitor to form a strongly stable substance. Northrop⁴⁵ also showed that inhibition and inactivation were rapid. In addition, he found that combination in acid solution would not render trypsin completely inactive as it could be dissociated quite easily, resulting in active trypsin. He further states that if the combination were held at a pH of 7.0 for a short period that the enzyme would become permanently inactivated, probably through a digestive action of other enzymes.

DURATION OF EFFECTIVENESS

The stability of trypsin appears to be shortened when mixed with saline in preparation for intravenous use. Innerfield²⁵ states that 40 to 50 per cent of the lytic activity is lost in the first three hours.

From experimental and clinical evidence, trypsin may be considered to have a relatively short duration of effectiveness. Because its use has been limited and conflicting results have been obtained regarding its effect on thrombi, recent efforts have been directed toward achieving only an adequate serum level with which clinical improvement can be noted. As will become more evident later, clinical improvement does not necessarily indicate thrombus changes occur and may mean only a subsidence of the symptoms produced by the thrombus.

Reports indicate that clinical improvement may precede any detectable laboratory changes by as much as one to four days after starting treatment.²⁵ Laboratory effects may be detected by the fourth day³⁴ and usually return to normal on or before the eighth day after starting treatment.¹⁷ Innerfield's work with dogs showed a return of laboratory results to normal in the first 14 to 18 hours.²⁶ Some investigators found that changes produced in the thrombus, which are occasionally seen several weeks after treatment, indicate a longer duration of action of trypsin. It has been postulated that this may come

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about through activation of "another proteolytic system." However, if past experiments concerning the amount and distribution of a trypsin inhibitor are valid, then such a long action of trypsin could not be considered likely.

Recently, a preparation of trypsin and sesame oil was developed for intramuscular use. The effective duration of this preparation has not been conclusively studied but may be somewhat longer than trypsin given intravenously. This is implied in the work of Innerfield²⁸ who used intramuscular trypsin in certain cases of chronic thrombophlebitis at weekly or semi-weekly intervals. He found that recurrence of symptoms appeared in three to five days after therapy had been discontinued.

When trypsin is given intravenously, clinical improvement is usually noted before effects on the clotting mechanism can be detected in the laboratory. Since treatment is directed toward obtaining a trypsin level which will produce clinical improvement, it usually is administered only over a period of about four days. Laboratory effects can be noted from approximately four to eight days after treatment. The duration of effect might then be compared to that of intramuscular trypsin. Experiments similar to those done with the intravenous route and timing the return of the clotting system to a normal state would possibly be of some value.

RECENT CLINICAL INVESTIGATION

Types and Cases Treated. Trypsin has been used in a variety of disease entities. In an effort to determine the effect of trypsin on venous thrombosis, attempt has been made to isolate from the wide variety of diseases reported those cases of venous thrombosis which have been treated with trypsin. These have been listed in Table 1. Three hundred fifty-seven studies have been obtained in this manner which, for the sake of brevity, could be classed as acute cases of chronic thrombophlebitis and phleb-othrombosis. The location of the thrombus has in most cases reported been in the lower extremity, with other loci cited in a few instances.

Routes and Dosage. Recently there has been some disagreement as to the dose of trypsin which should be administered by the intravenous route. This difference of opinion concerns whether trypsin should be used to lyse thrombi or to lessen the symptoms and complications produced by the thrombus.

Some authorities^{25, 34} advocate the use of 100,000 to 200,000 units of crystalline trypsin as a thrombolytic dose. This dose is mixed with 250 cc. of normal saline shortly prior to treatment. Infusion is started in a large cubital vein with the arm slightly elevated and using a Number 23 gauge needle. The rate of infusion is regulated at a constant 25-35 drops a minute. This dose is repeated daily for four

consecutive days. The series may be repeated again after two to four days.

Reports and clinical evidence, however, seem to show a more dramatic anti-inflammatory effect than thrombolytic effect, which has caused some to decrease the dose.¹⁷ It has been found that an initial dose of 10,000 units crystalline trypsin in 250 cc. of normal saline, given in the same manner, and increased daily by increments of 10,000 units daily to a total of 50,000 units, will give the same anti-inflammatory effects produced by the larger dose.

Since the intravenous route is accompanied by several distressing side effects and is inconvenient and uncomfortable for the patient, the intramuscular route has been stressed more recently.

Intramuscular trypsin in oil has been supplied under the trade name of Parenzyme in lots containing 5 mg. of trypsin per cc. (approximately 80,000 units). The dose advocated is from 2.5 to 5.0 mg. by deep intragluteal injections daily for four consecutive days. This route of administration has made possible ambulatory treatment following the remission of the acute or chronic illness.²⁸

Investigators state that intramuscular treatment for four consecutive days is usually adequate to produce clinical improvement. Innerfield⁴ followed the initial four days with 1.0 cc. daily until the patient was improved and ambulatory. He then followed that with five to 13 weeks of weekly or semi-weekly doses to prevent recurrence.

Correctives. Certain side effects have been frequently noted to accompany intravenous infusions of trypsin solutions. Precautions as to the technique of infusion and the use of certain medications in conjunction with trypsin seem to have eliminated most of these effects.

The incidence of infusion site thrombosis may be lessened with the use of a large vein and a Number 23 gauge needle to easily maintain a constant rate of flow of 25-35 drops per minute.

Pain, induration at the infusion site, and local inflammatory reactions may be diminished with slight elevation of the arm and the use of antihistaminics, such as Benadryl, 50 mg. by mouth, or Chlor-trimeton with 25 mg. in the infusion mixture.

Fisher and Wilensky¹⁷ incorporated 25 cc. of Sorenson's phosphate buffer in the mixture to obtain a buffering effect and render the solution more physiological.

The complication of intravascular thrombosis has not been described in cases where the intramuscular route has been used; but, if previous work indicating a histamine release from trypsin therapy is correct, antihistaminics may also be needed when the intramuscular route of administration is used. However, slow absorption may not release histamine in large amounts as seen in intravenous therapy.

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J. Pediat. 44:386, 1954.

White, R. H. R., and
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Brit. M. J. 2:755, 1953.

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Brown, H. W.:
J. Pediat. 45:419, 1954.

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TABLE I

<i>Investigator</i>	<i>Number Patients</i>	<i>No. and Type of Cases Treated</i>		<i>How Treated</i>	<i>Clinical Effect</i>
Laufman ²⁴	41	30	Acute thrombophlebitis	I.V.	Marked relief of symptoms in 3 days.
		11	Chronic thrombophlebitis	I.V.	Decreased pain, swelling, and tenderness.
Fisher and Wilensky ¹⁷	8	8	Thrombophlebitis not responding to other therapy	I.V.	Asymptomatic in 2-3 days.
	37	16	Saddle thrombi	I.V.	No response.
		13	Cerebral thrombi	I.V.	No response.
		8	Pulmonary infarcts	I.V.	All survived.
	80	80	Acute thrombophlebitis	I.M.	75 of 80 with decreased pain, calf tenderness, edema, temperature, and sedimentation rate. Later decreased size of thrombi, incidence of pulmonary infarcts, and post phlebitic syndrome.
Golden and Herkimer ¹⁹	8	8	Acute thrombophlebitis	I.M.	Asymptomatic in 12 to 24 hours.
Laufman and Roach ²⁴	30	10	Acute thrombophlebitis	I.V.	Acute symptoms gone in 48 hours.
		20	Chronic Thrombophlebitis	I.V.	Little effect.
Innerfield, Angrist, and Schwartz ²⁶	114	74	Acute thrombophlebitis	I.V.	Decreased size of thrombi in 24 to 48 hours. Completely gone in 2 weeks. No response in 3 patients.
		4	Chronic thrombophlebitis	I.V.	Reduction of edema in 24 to 48 hours.
		10	Phlebothrombosis	I.V.	Reduction of edema in 24 to 48 hours.
		12	Post operative thrombophlebitis	I.V.	Acute inflammatory reaction gone in 48 hours.
		2	Thrombosis of abdominal wall varicosis	I.V.	Thrombi gone in 4 weeks.
		12	Central retinal vein thrombosis	I.V.	Subsidence of edema in 24 to 48 hours.
Innerfield ²³	18	18	Selected, therapy resistant, chronic recurrent thrombophlebitis	I.M.	Clot slowly subsided. Circulation returned. Edema improved. Recurrence upon stopping injections.
Peck ²⁷	1	1	Chronic thrombophlebitis	I.V.	No recurrence using Hydergine and elastic stockings over 6-months period.

needed to combat the thrombotic effects produced by trypsin. However, the use of these agents as correctives has not been described in the literature.

CLINICAL EFFECTS

There appears to be a trend away from the idea of expecting trypsin to alter a thrombus or lyse thrombi by proteolytic action. However, some investigators still feel that at least the size of a palpable thrombus may be altered, and this possible proteolytic effect cannot be entirely eliminated at present.

Innerfield²⁵ states that thrombi will decrease in size in the first 24 to 48 hours after treatment and disappear completely in approximately two weeks. In his later studies,²⁸ he states that the thrombi slowly disappear and circulation eventually returns to the thrombosed vein segment. However, he states that

edema did not completely resolve in every case, but in most instances it improved considerably. Innerfield's work has been supported by Fisher and Welensky¹⁷ who found that approximately 80 per cent of the palpable thrombi resolved in the first 24 hours of treatment. In addition, Golden and Herkimer¹⁹ found that there was a striking resolution of the thrombus. Furthermore, Agress² was satisfied that thrombi could be altered enough to prevent complete occlusion. His work was on experimentally produced thrombi in dogs.

Laufman and Roach²⁴ feel that their experience has not shown trypsin to cause any exceptional changes in the state of the thrombus. They did think that the reduction of inflammation was much more striking in the studies than any effect on the thrombosis. In efforts to control their studies, these men in-

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stituted a three-day rest period prior to treatment. This effort was directed toward determining the effect of compulsory rest, elastic stockings, and elevation of the extremity on the state of the thrombus. They found no appreciable difference between patients treated with trypsin and controls. They do state, however, that patients who had secondary inflammation or infection superimposed on chronic thrombophlebitis did show more rapid improvement of the secondary lesions under trypsin therapy. Peck⁴⁷ came to the same conclusion.

Taylor, Overman, and Wright⁵⁶ state that since intravenous trypsin can cause thrombosis and, in some instances, cause propagation of a preformed thrombi produced in the ear veins of rabbits, trypsin should not be used as a therapeutic agent. They also feel that local phlebitis is easily treated by conventional means with satisfactory results, thus avoiding the dangers of trypsin therapy.

From reports of clinical use of trypsin in venous thrombosis, it is evident that case studies with adequate controls have been limited. The value of treatment with trypsin is questionable, especially if lysis of the thrombus is expected.

The greatest cause for objection to the use of intravenous trypsin in venous thrombosis is that trypsin is not thrombolytic with the present advocated dose. However, all using trypsin for this purpose agree that trypsin can cause rapid subsidence of co-existent inflammation, ulceration, and secondary infection.

Numerous reports state that the various signs and symptoms of venous thrombosis, such as pain, edema, tenderness, and Homan's sign, subside dramatically with trypsin therapy. Conventional treatment of these symptoms usually takes from six to 12 days to reduce the effects where trypsin can do it in one to three days (Table I).

This effect appears to be equally well produced with either the 250,000 unit dose or 50,000 unit intravenous dose or if the 5.0 mg. intramuscular dose is used. This feature alone is believed by some to be justification of the use of trypsin.

The incidence of success of the anti-inflammatory action in the 337 cases gathered from reports shows that approximately 82 per cent of the symptoms in cases of acute thrombophlebitis were absent in one to three days, and the same was true in 93 per cent of patients with chronic thrombophlebitis.

Reports of thrombolytic effects produced by trypsin cannot be disregarded altogether at present. Though the series of cases presented here is relatively small and control cases are at a minimum, there appears to be some significance to the incidence of size decrease of palpable thrombi. The incidence reported is shown to be from approximately 32 to 27 per cent in both acute and chronic thrombophlebitis

(Table II). Naturally, the incidence of size decrease of the thrombus depends upon its location and availability either to visual or manual examination and does not appear to be an adequate estimation of thrombolytic effect. Contrary to what one would expect to find, if the evidence given by Agress is supported, there appears to be less thrombolytic effect in acute than in chronic cases of thrombophlebitis.

It would appear that a trial of conventional treatment might reduce the incidence of both the anti-inflammatory and thrombolytic effects of trypsin.

SIDE EFFECTS

Reports have indicated several undesirable and even severe reactions following the use of intravenous trypsin. These may be listed as objective and subjective.

Objective

1. Local thrombosis at the infusion site. Fisher and Wilensky¹⁷ report the incidence at 0.7 per cent.
2. Allergic protein reaction. It has been stated that since trypsin is a low molecular weight protein, its allergenic potentialities are minimal. Fisher and Wilensky¹⁷ investigated this aspect and found by intracutaneous testing that there was some correlation between the degree of reaction, the size of the dose, and a past history of allergy. They found that no reactions could be obtained with a dose of 50,000 units, but in patients with allergic history one-third showed reaction with the test to 200,000 units.
3. Purpura. Minor purpura was reported by Innerfield²⁵ with an experimental dose of 750,000 units of trypsin.

Subjective

Peck⁴⁷ listed the subjective reactions as immediate and latent. He states that these complaints usually accompany the first dose, are found only occasionally on the second dose, and rarely with the third. He states that the same sequence would occur with each series of treatments.

1. Immediate
 - a. Flushed face, warming sensation, feeling of well being occur frequently.
 - b. Sensation of suffocation lasting one to three minutes after the start of infusion is occasionally seen.
2. Latent
 - a. Chill, slight depression of blood pressure with or without temperature elevation.
 - b. Anorexia, nausea, abdominal cramps occur usually within two to six hours after infusion.
 - c. Vomiting and pain in the infused extremity.

Generally, most of these reactions are regarded as of minor significance as they are of short duration,



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controllable in most instances. Peck feels that none of the side effects he observed were an indication to stop therapy.

TABLE II

<i>Acute thrombophlebitis</i>	<i>No. treated</i>	<i>No. asymptomatic</i>	<i>Lytic effects</i>
	30	30	
	16	0	
	13	0	
	8	0	
	8	8	
	80	75	
	10	10	
	74	71	71
	12	12	
	12	12	
	263	218	71
<i>Chronic thrombophlebitis</i>	11	11	
	8	8	
	20	20	
	4	0	
	2	2	2
	18	18	18
	1	1	
	64	60	20
<i>Phlebothrombosis</i>	10	10	

Intramuscular therapy has been reported to be free of many of these side effects and therefore appears to be the treatment of choice. The side effects from intramuscular trypsin have been listed as local pain and tenderness at the site of injection in 15 per cent of the cases, and nodule formation has been reported to occur occasionally. Innerfield²⁸ states that he has not experienced systemic allergic manifestations with this method of treatment.

There have been no reports in the literature of fatality caused by either intravenous or intramuscular trypsin.

LABORATORY EFFECTS

Most investigators find minimal effects produced by trypsin on the clotting mechanism as shown by laboratory tests.

It has been reported that when trypsin is given by intravenous injection, one may expect a slight increase of the prothrombin time for about six days, a diminished total serum protein (mostly of the globulin fraction) which goes from 2.75 to 2.0 for four to eight days, a slight drop in fibrinogen, and a slight leukocytosis. The intramuscular route has been reported to cause a slight increase in the prothrombin time also.

Several investigators report that there is no appreciable effect on the complete blood count, hemoglobin, sedimentation rate, coagulation time, prothrombin time, hematocrit, BUN, serum glucose, urinalysis, serum fibrinogen, or electrocardiogram.^{2, 34}

Precautions and contraindications. Since the effect of trypsin on the various systems is still not fully understood, it should not be inferred from the min-

imal effects noted in laboratory determinations or in the clinical effects that therapy with this agent is innocuous. Experiments show that overdosage may lead to death though it is likely that the fatal dose is several times the amount used for treatment.

Therapy is contraindicated in cases of congestive heart failure and severe anoxia, and cyanosis for methemoglobinemia has been described to occur as a result of a change in the oxygen carrying capacity of the trypsinized red blood cell.

Trypsin therapy is not advised in liver disease or hemorrhagic states, and Fisher and Wilensky¹⁷ list renal insufficiency as a contraindication.

IMPRESSIONS AND CONCLUSION

The participation of trypsin in the clotting mechanism has been suspected for many years, but its mode of action is still unknown. Investigation of trypsin has intensified since Northrop, in 1932, obtained a relatively pure crystalline form.

For many years trypsin was considered as a normal proteolytic factor occurring in serum, but investigation has found that trypsin only resembles the proteolytic factor plasmin which is present in states of sudden death, stress, anxiety, burns, and trauma.

The mode of action of trypsin is still unknown, but several similar effects have been shown to occur in vitro, in vivo, and in its clinical use. The mechanism seems to be a primary clotting action followed by secondary lytic action. The site where trypsin exerts its effect is possibly at the thromboplastin level.

Clotting actions observed in vitro have also been observed in laboratory animals and in clinical trials with intravenous trypsin. Although the formation of vascular thrombi is not fully understood, it seems evident that the clotting mechanism takes part in thrombus formation. Lysis of thrombi with trypsin apparently is not as evident in human and animal studies as the in vitro demonstrations would seem to indicate. Postulating the presence of a large amount of a substance, free in the cells and serum, which will inhibit trypsin in vivo would appear to explain this discrepancy.

In recent years trypsin therapy has been directed toward the anti-inflammatory action rather than the thrombolytic action. This improvement may not only be seen as reduction of symptoms but also as shortening the course of superimposed inflammation, ulceration, and infection. The mechanism of this action is also thought to depend on the fibrinolytic action of trypsin. The action seems to be on the exudate as the lysis facilitates circulation and permits antibiotics to come into closer contact with infecting organisms. This action suggests that a high level of trypsin would be necessary if proteolysis of fibrin

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REFERENCE: 1. Robinson, R. C. V., *J.A.M.A.* 157:1300, April 9, 1955.

is to occur. This would appear to be necessary from investigations based on the lysis of venous thrombi.

The inability of trypsin to lyse thrombi is not accepted by all investigators. Some still feel that thrombi produced at the infusion site are due to impurities of the product (alpha or beta chymo-trypsin) or due to poor technique of administration. Investigations of the effect of trypsin on the forming thrombus lend some support to the possible usefulness of trypsin's proteolytic properties. In some instances, trypsin appeared to prevent extension of thrombi if treatment was instituted shortly after the thrombus was formed. It further seemed to prevent thrombi from forming if instituted before the thrombus formed. However, it has not been reported that this mode of treatment has been investigated clinically.

On the whole, clinical investigation has been limited and controls have been few. There is some encouragement from reported cases of chronic thrombophlebitis, which are refractory to other forms of therapy, having responded to treatment with trypsin.

At present the greatest asset of trypsin appears to be in its anti-inflammatory effect. In a large number of instances pain, edema, and discomfort are ameliorated in the first 24 to 48 hours, as compared to six to 12-day periods required for resolution by conventional treatment. Secondary infection and leg ulcerations also appear to clear promptly with trypsin.

Since intravenous trypsin is accompanied by several undesirable side effects, and hospitalization is necessary for treatment, more emphasis should probably be placed on intramuscular trypsin. Intramuscular trypsin has been reported to have fewer and milder side effects. Although allergic manifestations have been regarded as rare, they should be considered, especially when an allergic history is obtained and if the use of a large dose is contemplated.

Even though laboratory effects are noted to be of short duration and of minor importance, the laboratory should be utilized prior to therapy to determine bleeding tendencies or liver disease.

If proper precautions are kept in mind as to the dose, rate of administration, and correctives used, there do not appear to be any serious reactions from intravenous trypsin. However, the benefit obtained from this method of treatment appears to be no better than the more easily administered intramuscular form and is certainly less discomforting and dangerous for the patient.

Trypsin does not seem to fulfill the need for a thrombolytic agent which can be used in the treatment of venous thrombosis. Its value may lie only in lessening the acute symptoms of inflammation, infection, and ulcerations, and in affording earlier ambulation.

The indication for trypsin therapy in venous thrombosis, at present, appears to be in those cases

of chronic thrombophlebitis which are refractory to trial with conventional management. It may also be indicated in the prophylactic treatment of postoperative venous thrombosis and in conjunction with heparin or dicumarol therapy.

The need for a better thrombolytic agent is still present. Perhaps the recent work on the isolation of plasmin by Clifton, Grossie, and Cannella⁷ may be helpful. They have indicated that its thrombolytic effect surpasses trypsin. Sherry, Titchener, and Leonard⁵³ state that plasmin and streptokinase together have a much stronger lytic effect than either plasmin or trypsin alone.

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THE KANSAS PRESS LOOKS AT MEDICINE

Editor's Note. In this section the JOURNAL reproduces editorials relating to medicine which have appeared in the lay press. An effort is made to include both favorable and unfavorable comments, and the Editorial Board in no instance assumes responsibility for the opinions expressed.

THE MEDICAL CUSHION GROWS

Here's a bit of good news: The American people are doing a pretty good job of voluntarily cushioning themselves against the financial impact of illness.

A survey made by the Health Insurance Council tells the story. Nearly two out of every three men, women and children in the United States are now covered by voluntary health insurance. Some 104,000,000 have insurance against hospital expense, 89,000,000 have surgical expense protection, and 50,000,000 have regular medical expense protection. . . .

Another striking fact is that since the beginning of 1941 the number of persons with hospital expense protection has multiplied nearly eight-and-one-half times.

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No one claims that the financial problems connected with illness are all solved. But the point is that we are making dramatic progress toward the goal—and we are doing it voluntarily and on our own hook, not because the government forces us to.—*Abilene Reflector-Chronicle, July 30, 1955.*

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tical answer to the problem that comes, sooner or later, in every small community.—*McLouth Times*, August 4, 1955.

CRIME AND THE CITIZEN

(This is another in a series of letters to the *News-Herald* from distinguished Kansans on the subject of sex criminals. The *News-Herald* invites all its readers to join in the discussion.—ED)

Thank you for the opportunity of seeing your editorial on sex criminals. The physicians of Kansas have been concerned as you and many others have been about these indefensible crimes. If there is anything the members of the Kansas Medical Society can conceivably do to prevent even one recurrence we want to do it.

Unfortunately, good intentions are not enough. The Legislative Council, I believe, has been charged with the duty of attacking this situation. Attempts will be made to recognize and control the criminal sexual deviate if possible before some outrage has occurred. Certainly, the psychiatrist must play a large part in this and I am sure those specialists in our Society are ready and anxious to help. Cooperation of doctors with lawyers, penologists and others concerned with this problem can be assured.

The press has made a tremendous contribution in bringing these cases frankly and honestly to the attention of the public. The press can be of further service by emphasizing the rarity of these occurrences and refusing to over-play the dramatic and prurient sides of the picture.

At present the stock phrase of the authorities that "known sex offenders are being investigated" has worried many people. Some apprehensive parents are led to believe that sex offenders capable of major crimes are frequent and well-known to the police. Recognized molesters of children should be kept under such surveillance or confinement that they have no opportunity to cause harm but it is doubtful if widespread drives against the minor sex deviate of only mildly anti-social attitudes would prevent many serious crimes. It is possible that laws regarding punishment and parole of this type of criminal are too lenient. Certainly the Legislative Council should answer this.

The situation calls for calm investigation by experts who know how these diseased minds work, by men who are familiar with the results of jail sentences, paroles, fines, and other punitive or correctional measures, by trained lawyers and law-makers and others working in response to an enlightened public, guided and informed by an alert and intelligent press.

It should be emphasized that these are the individual opinions of an internist with no particular train-

ing in psychiatry. I can, however, promise 100 per cent cooperation from the Kansas Medical Society.—*J. M. Porter, M.D., President, Kansas Medical Society, Concordia.*—*Hutchinson News-Herald*, August 7, 1955.

BOOK REVIEWS

Surgery of the Alimentary Tract, Volumes I, II, and III. By Richard T. Shackelford, M.D., assisted by Hammond J. Dugan, M.D. Published by W. B. Saunders Company, Philadelphia. 2575 pages, 1705 illustrations. Price \$60.

Occasionally someone writes a truly monumental work on some medical subject, one which is accepted as authority and remains as a standard text for longer than most medical books are kept. Such a work was Bickham's *Operative Surgery*, published in 1924. A revision of this work was started by Callendar, but his untimely death prevented completion of the task. Dr. Shackelford has completed the re-writing (rather than only a revision) of that part having to do with the alimentary tract, and the three-volume set is a worthy successor of an illustrious "ancestor."

Instead of only a description of operative technique, there is an evaluation of the various procedures described (and most operations done on this system today are included) with reasons why they are good or inferior and a concise discussion to help in selecting the best procedures.

The format is pleasing in appearance and readability; the illustrations are excellent. Each volume has the index for all three volumes, which greatly facilitates finding desired material, and most of the "desired material" is contained in the books. This work should prove to be a popular and useful one for any surgeon doing gastrointestinal work.—*O.R.C.*

Saddle Block Anesthesia. By Ray T. Parmley, M.D. Published by Charles C Thomas, Springfield, Illinois. 58 pages, 9 illustrations. Price \$2.50.

This is an excellent short review of a small part of spinal anesthesia. The foreword by Doctor Adriani is most appropriate in giving the reader a well written opinion on the status of spinal anesthesia in general. The rest of the book deals with technique, with the basic physiology and pharmacology adroitly interwoven, but minimal in amount.

A separate chapter of ten pages on uses in obstetrics tells some of the arguments for and against this technique. The final chapter deals with com-

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Jan. 22-Mar. 25	ROENTGENOLOGICAL PHYSICS (Two-hour session on Sundays, time to be determined)

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Oct. 21-Apr. 20	INTERPRETATION OF ELECTROCARDIOGRAMS—Course I (Twenty-six weekly lessons)
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Nov. 24-May 24	INTERPRETATION OF ELECTROCARDIOGRAMS—Course II (Twenty-six weekly lessons—for those who have completed Course I)
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Feb. 24 & 25	HEARING & SPEECH CONFERENCE
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plications and warns the anesthetist of the ways they can be avoided.

This is a useful addition to the literature. It can be read easily in one night, and the "pearls" acquired will be well worth utilizing.—*E.L.F.*

ANNOUNCEMENTS

The 85th annual session of the Colorado State Medical Society will be held in Denver, September 20-23, with headquarters at the Shirley-Savoy Hotel. Guest speakers will be Dr. L. Henry Garland, San Francisco; Dr. Philip D. Wilson, New York; Dr. John C. Burch, Nashville; Dr. Charles Ragan, New York; Dr. James T. Priestley, Rochester, and Dr. Thomas L. Shipman, Los Alamos, along with local participants.

Each day will be devoted to a separate subject: Wednesday, the pelvis; Thursday, the joints; Friday, the adrenals. A one-hour closed circuit television program will be presented each morning, originating from Denver General Hospital. There will also be sports events, a stag dinner and smoker on Tuesday evening, and a dinner dance on Thursday evening.

A postgraduate symposium on pulmonary diseases will be held in the Post Theater of Fitzsimons Army Hospital in Denver, September 26-30, under the sponsorship of the hospital, the University of Colorado School of Medicine, and the American Trudeau Society. Dr. Michael L. Furcolow, of the University of Kansas School of Medicine, and Major Paul W. Schafer will be guest clinicians. The course is open to all physicians for a fee of \$5.00, but registration will be limited to 300.

Programs may be secured from Director of Postgraduate Medical Education, 4200 East Ninth Avenue, Denver 20, Colorado.

A course in occupational skin problems will be presented at the Kettering Laboratory, Cincinnati, October 10-14, by the University of Cincinnati and the Public Health Service. The registration fee will be \$75. Applications for registration should be sent to the Institute of Industrial Health, Kettering Laboratory, Eden and Bethesda, Cincinnati 19, Ohio.

The American Goiter Association again offers the Van Meter prize award of \$300 and two honorable mentions for the best essays submitted covering original work on problems related to the thyroid

gland. Deadline for entries is January 1, 1956. Information may be secured from the secretary, Dr. John C. McClintock, 1491½ Washington Avenue, Albany, New York.

The 24th venereal disease postgraduate course for physicians, sponsored by the University of Chicago and the Public Health Service, will be given at the University of Chicago, September 26-30. No tuition will be charged. Applications for admission are to be sent to the Section of Dermatology, Department of Medicine, University of Chicago, Chicago 37, Illinois.

The Academy of Psychosomatic Medicine will hold its second annual meeting, October 6-8, at the Plaza Hotel, New York City. The subject of the program is "The Psychosomatic Aspects of Drug Administration." No registration fee will be charged. Programs may be obtained from the secretary, Dr. Ethan Allan Brown, 75 Bay State Road, Boston.

A postgraduate course on fractures and joint injuries will be given at the University of Colorado School of Medicine, October 20-22. All physicians are invited to attend, and the program will be intended for the general physician. Information may be obtained from Director of Postgraduate Education, 4200 East Ninth Avenue, Denver 20, Colorado.

The American College of Physicians announces that a course entitled "Recent Developments in Psychiatry for the Internist" will be presented at the Menninger School of Psychiatry, October 24-28. Cooperating in the program are the Menninger School of Psychiatry, Topeka State Hospital, Winter VA Hospital, and the University of Kansas School of Medicine. Dr. Karl A. Menninger is director. Members of the College will pay a registration fee of \$30 and non-members \$60. Registration is limited to 100. Registrations are to be made through E. R. Loveland, M.D., 4200 Pine Street, Philadelphia 4, Pennsylvania.

The annual convention of the American College of Gastroenterology will be held at the Shoreland, Chicago, October 24-26. The program will include a panel discussion on peptic ulcer. The annual course in postgraduate gastroenterology will follow, October 27-29, also at the Shoreland. Information may be obtained from the College, 33 West 60th Street, New York 23, New York.

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Dr. Lawrence Peters joined the faculty of the University of Kansas School of Medicine on July 1 as professor and chairman of the department of pharmacology, leaving a similar position he had held in the Tulane University School of Medicine, New Orleans, since 1953.

A teacher in the various schools in which he has studied since 1938, Dr. Peters has done extensive research on basic studies on the kidney as well as on treatments for threadworm and flat worm infections. Dr. Peters, a native of Canada, has been a citizen of this country since 1950.

TELEVISION SHOWS OF MEDICAL INTEREST

The fall schedule for two network medical television programs produced with the cooperation of the American Medical Association will be started in September. One series is produced by Ciba Pharmaceutical Products and the other by Smith, Kline and French Laboratories.

The Ciba program, *Medical Horizons*, on ABC-TV, will be presented weekly on Monday evenings at 8:30. It will depict specific accomplishments in the field of medicine as exemplified by the teamwork of modern medical research, education, and practice. The telecasts will originate in medical institutions and research centers throughout the country.

Smith, Kline and French will present six programs in its 1955-1956 series, continuing under the *March of Medicine* title. The first will be on Tuesday, September 20, at 8:30 over the NBC-TV network.

STANDARDS FOR GRIEVANCE COMMITTEES

Standards for medical society grievance or mediation committees are being developed by a special committee appointed by the A.M.A.'s Board of Trustees. The group of consultants includes the executive secretaries of three state societies and several A.M.A. staff members. They will visit 25 state association offices to collect information and will assemble data from the others by correspondence.

In addition, a special survey form is being sent to approximately 70 county societies. Some of those will be visited by the committee to gain information on a variety of types of grievance organizations.

Mr. J. W. Holloway, Jr., who has been on the legal staff of the American Medical Association almost 30 years, has announced his retirement. He will continue, however, as a member of the A.M.A. Committee on Medicolegal Problems.

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*Farley, W. J.: Oxytetracycline in Pediatrics,
Internat. Rec. Med. 168:140 (March) 1955.



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THE JOURNAL *of the* KANSAS MEDICAL SOCIETY

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Volume LVI

OCTOBER, 1955

No. 10

Primary Uterine Suspension: A Surgeon's Views

Donald R. Davis, M.D.

Mission, Kansas

Transabdominal suspension of the uterus as a primary procedure is of questionable merit. Certain conditions attributable to laxity of uterine support, retrodisplacement of the uterus, prolapse uteri, and even procidentia, have been treated frequently with operative procedures designed to return the uterus to normal intra-abdominal relationships. During recent years, however, the value of such an operative attack has been questioned seriously.

Although hysteropexy, or "uterine suspension," has been described in most leading textbooks of surgery, in comparison to other surgical diseases of the uterus it is interesting to note the relative sparsity of information available in surgical literature regarding the operation and its results. Also, it is of interest to note the incidence of primary hysteropexy appears to decrease inversely in proportion to the training of the operating surgeon. With regard to the high frequency with which this operation is encountered on operating schedules of our hospitals, it is noteworthy that hospitals possessing rigid educational requirements for membership to their surgical staffs have the lowest incidence of primary uterine suspension operations.

Opinions regarding primary hysteropexy are divided into two camps. There are those who are favorably impressed with results of uterine suspension and believe it to be a sound procedure based on definite indications. On the other hand, there are surgeons and gynecologists who believe the operation is worthless, unsound in principle, based on a battery of indefinite indications, and exposes the patient to needless surgery and anesthetic risk. Shamefully to say, there remains a small intermediate group devoid

of definite individual opinion but who recommend and perform the operation, possibly in pursuit of a surgical fee!

To state that an operation designed to relieve the patient of symptoms is unsound and valueless is insufficient, in my opinion, unless such a statement can be based on a large series of case histories with corroborating follow-up data and controls. Conversely, to perform an operation which is of questionable value is equally ridiculous unless an objective effort is made to determine, from the results obtained, the true value of the procedure.

The nature and multiplicity of symptoms commonly attributed to retrodisplacement of the uterus, backache, heaviness in the pelvis, a sensation of bearing down, dysmenorrhea, menstrual irregularities, dyspareunia, recurrent endometritis, and infertility, make it extremely difficult to select a common denominator useful as criteria in such a study. Obviously, however, there is need for compilation and documentation of statistical data which will outline clearly the indications for primary hysteropexy or discredit the operation completely, whichever the case may be.

Retrodisplacement of the uterus, congenital or acquired, is not a disease and is seldom symptomatic per se, nor is it life-threatening! The normal uterus occupies a position of moderate ante flexion, lying in a midline supravaginal position with its long axis approximately 60° from the horizontal plane. Under normal conditions, the uterus may deviate considerably from its theoretically "normal position"; it has been said that approximately 20 per cent of normal uteri lie in some degree of posterior displacement.¹

To define normal uterine position is necessary at an educational level, but it appears the academic definition has been too precise. Physicians, taught to explain symptoms on the basis of pathologic changes, too often find it convenient to associate certain symptoms to the displaced uterus. More often than not, the same symptoms are encountered in persons with normally positioned uteri who show no other identifying pathology. To assure a patient that hysteropexy will alleviate her symptoms under such circumstances is sheer guesswork and based on something other than scientific knowledge!

Prolapse of the uterus occurs as a result of relaxation of fibrous sheaths surrounding blood vessels and accompanying structures which supply the pelvic viscera, not as a result of inadequacy of the ligaments of the uterus and muscular action of the pelvic diaphragm. The round ligaments are vestigial structures, analagous to the gubernaculum testes, having functioned in dragging the ovaries from their embryonic positions on the genital ridge to their final resting place. The broad ligament, a true meso-ovarium and mesosalpinx, plays no role in mechanical support of the uterus. The uterosacral ligaments are simply folds of peritoneum, void of any major supportive function. The sole supporting element of the uterus is a perivascular fibrous investment, derived from the endopelvic fascia, accompanying blood vessels in the parametria, and firmly attached to the cervix.

Obviously, with due consideration to anatomical and physiological changes incidental to gestation, ligamentous suspension and ventral fixation of the uterus is a poor approach to the problem of prolapse uteri. Symptomatic prolapse requiring treatment during the child-bearing age may be adequately managed with an operation of the Fothergill type; after the child-bearing age, vaginal hysterectomy has much to recommend it.

I am of the opinion that indications for primary uterine suspension are exceedingly few but admit there are rare instances in which the operation may be of value. Perhaps the most feasible indication is the problem of long standing sterility where, due to retrodisplacement, the cervix lies in apposition with the anterior vaginal wall. Replacement of the uterus to normal relationships, temporary though it may be, will direct the cervix into the seminal pool in the posterior fornix. Candidates must be selected carefully, and the operation should not be done unless both husband and wife have been studied adequately. Furthermore, malposition must be persistent despite conservative measures, including attempts to replace the uterus by manual manipulation, trial by pessary, and exercises.

Those in disagreement with this indication maintain the same can be accomplished simply by having

the patient sleep on her stomach after sexual intercourse. Such a simple solution may not be entirely adequate in that it permits postural drainage of the vagina by reversing the vaginal axis.

A second conceivable indication for primary hysteropexy is severe dyspareunia associated with retrodisplacement of the uterus. Although the normal uterus is not a tender organ, even when it is malpositioned, persons with retrodisplacement occasionally complain of discomfort during sexual intercourse. The uterine corpus, lying posterior to the vaginal canal, may be impaled by the intruding penis with each masculine oscillation yielding a sensation of discomfort. Such appreciation of coital displeasure is undesirable and may contribute to frigidity problems endangering family integrity.

Secondary uterine suspension, an item not pertinent to this paper, is indicated where excessive operative denudation occurs with conservative operations for endometriosis associated with concomitant retrodisplacement of the uterus. The operation prevents posterior fixation of the organ and provides a method of peritonization. Also, whenever the adnexa has been sacrificed, it is a wise procedure to suspend the uterus.

I can conceive of no indication at all for ventral suspension. Should hysteropexy be indicated, primary or secondary, I believe a ligamentous suspension of the Gilliam or Baldy-Webster type to be the operation of choice.

SUMMARY AND CONCLUSIONS

1. Primary hysteropexy is of questionable value as a method of treating retrodisplacement of the uterus. The operation has no place whatever in the management of prolapse uteri or procidentia.
2. There is need for documentation of statistical data which will delineate or deny the indications for primary hysteropexy.
3. Primary hysteropexy may be of value in sterility problems of long standing where the cervix lies in apposition with the anterior vaginal wall. Also, severe dyspareunia associated with retrodisplacement may be an indication for primary hysteropexy in rare instances.
4. It is the author's opinion that primary hysteropexy is performed more frequently than adequate indications would justify, and a certain portion serve only to facilitate amortization of the mortgage on the operating surgeon's Cadillac!

Medical-Dental Building
5830 Nall Avenue
Mission, Kansas

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Primary Uterine Suspension: A Gynecologist's Views

Dan L. Berger, M.D.

Mission, Kansas

Thirty years ago Arthur Dean Bevan¹ editorialized "... We must conclude without any reserve that the time has arrived when operations done on women for retroposition of the uterus, for this condition alone, are unwarranted, unnecessary, and indefensible because of two facts: That these operations are of no benefit to the patient and they carry with them the serious risks such as I found in the three cases which I have enumerated." That this and a hoard of similar utterings have been disregarded in the ensuing years is evident to anyone casually scanning the operative schedules in a majority of our hospitals today.

The uterus is normally suspended by a sling of fascial tissues (the cardinal ligaments or Mackenrodt's ligaments) which are condensations of fibrous tissue lying in the base of the broad ligament and attached to either side of the cervix about the level of the internal os. This has been adequately demonstrated by Mengert² and others.

The usual position of the uterus is in anteversion and slight antelexion. The normal uterus is an organ of great mobility, and only about 80 per cent of uteri are so placed.³ A movable uterus which is retroverted and retroflexed is no more abnormal than a hand that is temporarily held above the head, even though it may deviate from the classical anatomical position.⁴ Operative procedures on the approximately 20 per cent of normally retrodisplaced uteri are entirely unjustified.

The problem of prolapse of the uterus is in fact a multifaceted one which is composed primarily of two factors: relaxation of the normal supporting structures (cardinal ligaments), and elongation of the cervix itself. Retrodisplacements have been implicated, but the cause and effect relationships are not entirely clear. A high percentage of nulliparous women with prolapse have an occult spina bifida which has led some observers to postulate a neurogenic influence.

The use of any of the suspension operations totally ignores the primary pathology of the condition, and ventrofixation is merely a stop-gap procedure. The pathology remains and continues to progress with the result that the cervix gets even longer and the uterus itself begins to elongate from its attachment to the abdominal wall. This is a gradual process taking up to several more years to reach its former extent of descensus.

Hysteropexy is thus seen to be an irrational approach to the problem of prolapse and one which will be ultimately unsuccessful in a high proportion of

cases. Its use in elderly women who must undergo laparotomy for other reasons is justified occasionally, but as a primary procedure one of the several vaginal operations carries greater chance for success and, in general, a lesser mortality.

Retrodisplacement of the uterus has been blamed for a wide variety of pelvic symptomatology varying from pain to leukorrhea. In a *very small* group of each of these conditions it probably does play a part. It can be stated categorically, however, that the movable retrodisplaced uterus is not a pathological uterus and that other causes of pelvic pathology must be excluded.

The uterus fixed in retroversion is held there either by adhesions from a previous inflammatory disease or pelvic surgery, or by endometriosis, and the symptoms are caused by this pathology and not the retrodisplacement. Peritoneal adhesions from a suspension or other laparotomy may only increase the symptoms or introduce new ones. The amelioration of symptoms one often sees with suspension of the retrodisplaced uterus is temporary or incomplete in a high percentage of cases, and the fleeting good results are due in large part to the placebo effect attendant on any therapeutic regime, plus a period of bed rest with release from physical and emotional stress.

The *rare* case of retrodisplacement that will benefit from hysteropexy must be carefully selected if we will avoid unnecessary surgery. If a uterus can be replaced bimanually and held there with a pessary with complete relief of symptoms, if these symptoms recur with removal of the pessary and subsequent retroflexion of the uterus, and can again be banished by anteversion of the uterus and a pessary, then, and only then, may a patient be properly considered for hysteropexy. Again we must bear fully in mind the placebo effect of merely inserting a pessary when we come to the final preoperative evaluation of these patients.

There are many other methods of dealing with patients with prolapse and retrodisplacement which may yield permanent or long lasting cures and certainly are sufficient for a large number of patients. Such procedures include Kegel⁵ exercises, positional exercises such as knee chest position and sleeping on the stomach, and even the permanent use of a pessary. This last may well be the best procedure in elderly, poor risk patients who are nearing the end of their life span or as a temporary measure in younger women who desire another child. These lack the ad-

vantage to the surgeon of showmanship and a surgical fee, but to the patient they may mean the difference between a reasonably comfortable life and a fatal operating room accident.

Hysteropexy as an operation should not be totally cast aside, but rather it should be viewed in its proper relationship to pelvic surgery as a whole. If a laparotomy is indicated purely for other reasons and a fixed retrodisplacement is encountered incidentally, then certainly the operator is justified in freeing the uterus and holding it in an anterior position.

If the patient has had an adequate trial with a pessary, as described, and fulfills *all* criteria, then a hysteropexy may be considered. The occasional elderly poor risk patient with prolapse whose abdomen must be entered for other reasons may well benefit from a ventrofixation, and it conceivably may hold for the rest of her short life. These indications are met only rarely and in few of them is hysteropexy the primary procedure.

SUMMARY AND CONCLUSIONS

The rationale of hysteropexy has been discussed. This operation as a primary procedure has been viewed with increasing disfavor by a vast majority of gynecologists and in some institutions has been entirely abandoned. The author feels that primary hysteropexy is rarely indicated and that its chief value is as an adjunctive procedure when laparotomy must be done purely for other indications.

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Present Status of Treatment of Advanced Laryngeal Cancer: Report of a Case

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There is little disagreement today about treatment of cancer limited to one vocal cord, uninvolved at either end and freely movable. Laryngofissure and x-ray therapy both give high cure rates (85 per cent or better). When a lesion exceeds this extent, the issue becomes considerably more complicated.

In moderately far-advanced lesions not amenable to simple laryngofissure (clipping operation), one must choose between radiation therapy, partial or total laryngectomy. In the past, statistical data of cures have not been especially helpful for two reasons: (1) the criteria for selection of cases for any given treatment modality varied widely from one clinic to another and (2) treatment methods, both radiologic and surgical, have improved so much in the past few years that presently available figures for five-year survival are for the most part based upon outmoded procedures.

Del Regato¹ has mentioned that few radiologists about the country were trained to treat laryngeal carcinoma. The radiologist either had to be well trained

in the medical aspects of laryngology or else work in intimate association with a laryngologist. Most laryngologists, unfamiliar with radiologic methods and discouraged by earlier poor results with x-radiation, preferred surgical procedures, and only in a few centers did the necessary teamwork develop.

There is now general agreement¹ among laryngologists and conservative radiologists that x-radiation has little or nothing to offer in lesions which are either retrocricoid, subglottic, or sufficiently infiltrative to interfere with the motility of a vocal cord. Extensive lesions involving the aryepiglottic fold, pyriform sinus, or lateral hypopharyngeal wall, which used to be treated exclusively by x-ray with disappointing results, are now being salvaged by modern surgical methods. Radiologists,² here, are well content to be "second-wave assault troops," preferring the surgeon to remove as much involved tissue as possible to prepare the way for a maximally aggressive radiologic attack upon the disease without having to fear the miserable complication of radio-

chondronecrosis with its attending infection and sloughing.

Statistical results, fortunately, do not afford the sole avenue of investigation of the problems of laryngeal cancer. In fact, even good statistics of any large series of cases have, in general, "low resolving power" for analysis of many important therapeutic problems. No less scientific, and considerably higher in "resolving power," is the detailed clinical and pathological study of individual cases, sufficient in number to represent the characteristic clinical problems. For such study the clinician must devote considerable time to the detailed dissection of surgical specimens, a task which should not be entirely delegated to the pathologist.

Pathologic studies in various clinics^{3, 4, 5, 6, 7} have shown that 25 to 30 per cent of laryngeal cancers have metastasized to the cervical lymph nodes when these nodes are not clinically palpable nor even grossly demonstrable at surgery. This gives an approximate figure for the failure rate to be expected from total laryngectomy in cases formerly thought suitable for this operation.

More than a decade ago, the old fashioned "narrow field" or "subperichondrial resection" of the larynx was replaced by a so-called "wide field" procedure in which at least the sternothyroid and thyrohyoid muscles were removed along with the larynx. The more recent pathologic studies have shown microscopic invasion of the *outer* strap muscles and other fairly remote structures in cases thought curable by the old wide-field method.

In the past few years the attitude of surgeons has changed considerably as a result of these observations, and it may be expressed thus: *Once the decision has been made to sacrifice the larynx, it is advisable to sacrifice with it as much, rather than as little, neighboring tissue as possible.* The tissues neighboring the larynx are, for the most part, not vital, and their removal entails nothing in the way of added disability while it does insure a considerable added margin of safety.

Within the past couple of years it has gradually become an accepted practice to perform simultaneous prophylactic radical neck dissection on the side of major involvement whenever the larynx is removed, a procedure amply justified by subsequent development of metastases in 30 per cent of cases when this is not done. The expectant policy of waiting until clinical metastases develop is going by the board. Bocca⁷ said in 1953: "It is surprising that laryngologists should keep on arguing about a problem which has long been unanimously settled in other fields of cancer surgery." Very few figures are presently available for results of simultaneous laryngectomy-neck dissection. Justification must rest on sound pathologi-

cal principles until fortified with definitive statistics which should be available within the next few years.

Modern laryngectomy requires meticulous anatomic workmanship. As a result of improvements in the techniques of replacement of fluid, electrolyte, and blood losses, and the employment of pentothal sodium supplemented by nitrous oxide, laryngectomy-neck dissection and other radical head and neck procedures can be carried out without haste and with a remarkable absence of shock and other complications.

The usual T-shaped incision has given way to the original U-shaped Gluck-Sorensen incision which parallels the sternocleidomastoid muscles, crossing the neck just below the first tracheal ring. This incision, recently revived by Ogura,⁴ permits ideal access to both sides of the neck for purposes of exploration and radical dissection.

The modern operation encompasses removal of the larynx with all strap muscles, the hyoid bone, epiglottis, pre-epiglottic space, and one or more tracheal rings, plus en bloc neck dissection on the side of major involvement. This basic procedure is capable of extension to include resection of the base of the tongue, pharyngeal wall, cervical esophagus, or bilateral neck dissection. When reconstruction of the cervical esophagus is necessary, a flap hinged on one side is employed instead of the usual U-shaped flap hinged superiorly at the hyoid level. This lateral flap is used for purposes of esophageal reconstruction (Wookie operation).

In the last few years, the operation of partial laryngectomy (sometimes miscalled hemilaryngectomy) has been pushed to "extreme limits of usefulness." This category of procedures entails a laryngo-fissure-type approach in which, however, the larynx is not split in the midline as in the clipping operation, but is entered through the thyroid ala on the side of lesser involvement, well beyond this involvement (at least 1 cm.). Parts of one or both thyroid alae are resected. The patient is left with some kind of functioning larynx and does not face life with an anatomic divorce of his breathing and nutritive functions in the form of a permanent tracheostomy.

Some years ago, Hayes Martin⁸ warned that attempts to extend the upper limits of usefulness of this procedure would result in a deterioration of statistical results, since cases would be so treated which might better have been subjected to total laryngectomy. It is interesting to observe that partial laryngectomy for extensive lesions is practiced mostly by surgeons who devote much of their effort to plastic work. For example, Pressman⁹ speaks of disassembling and reassembling the larynx as one does a nose in performing rhinoplasty. Such a concept, if taken quite literally, would seem at variance with the basic oncologic principle of wide en bloc resection. (On

the other hand Ogura,¹⁰ also an expert in rhinoplasty, states that his experience of rhinoplasty has contributed greatly to his technical facility of performing *radical* laryngeal surgery entirely by scalpel dissection.)

Conservative laryngologists interpret the indications for partial laryngectomy quite rigorously. Clerf⁵ has decried the tendency to extend the procedure to doubtful cases and has pointed out that cicatrization of the larynx all too frequently results—even in the best hands—which makes early detection of recurrences difficult.

One wonders whether employment of partial laryngectomy for large, advanced intrinsic lesions really constitutes an "advance in technique" as claimed by some. The situation in regard to partial laryngectomy presents some analogies to surgery for cancer of the rectum. Here, a few advocate a "pull through" type of operation with preservation of the anal sphincter. Despite the fact that patients are just as reluctant to part with the not-uniquely-human function of defecation per rectum as they are to part with laryngeal speech, the vast majority of general surgeons unhesitatingly close forever the southern portal of the anatomy and leave their patients to face life with permanent colostomies. They have, for years taught that "It's better to be resectable than respectable." The laryngologist has somewhat more leeway in electing a definitive procedure. Though he may be conservative by nature, spending most of his time with the "smaller things of otolaryngology"—adenoids and tonsils, sinusitis, and allergy—he does well to emulate the courage of his general surgical colleague when the occasion arises.

In deciding upon the relative merits of total versus partial laryngectomy in each case, the clinician must keep in mind that his first duty is to save life, his second to preserve function. The incompatibilities of these two aims are logically quite complex in varying situations. No patient, even when fully informed of the relevant facts, is capable of making a rational choice in these matters. The clinician is wise who thinks the issue through to a decision without inviting the patient to participate directly or covertly in his deliberations.

Once a definite recommendation has been made, the patient may elect not to follow it, and the clinician is still free to suggest with a clear conscience the second best treatment. If given the opportunity by participating in the decision before the clinician is himself clear as to the indications, patients will almost invariably elect to risk their best chance of cure in favor of temporizing measures which will permit salvage of the larynx. The threat of death from the disease itself is less real to them than the more immediate one of surgical mutilation.

The clinician owes any patient in whom he thinks laryngectomy indicated, a thorough briefing on the prospects of a laryngectomized life. Fortunately, there is a great deal to be said on the credit side. The patient may be assured that the loss of speech function is only a temporary one, since the vast majority can be taught buccoesophageal speech in six weeks to three months. The very few who will not or cannot learn it can still obtain satisfactory results with the artificial larynx. The buccoesophageal voice, it is true, is usually somewhat flat and monotonous in quality but serves admirably to communicate and is readily understood over the telephone.

McCall¹¹ actually advocates the institution of buccoesophageal speech training before laryngectomy. Some training in the technique of belching is generally advocated preoperatively. Beyond this, however, in addition to the technical problems involved, it seems psychologically necessary for the threatened loss of the larynx to become a reality to which the patient then has an opportunity to react with appropriate psychic shock and ensuing depression, just as Cholden¹² has shown inevitably to occur in the newly blinded. This is a reaction similar to mourning the loss of a loved one, a necessary prelude to rehabilitation. The physician assumes here a supportive role without attempting the impossible as well as undesirable task of preventing altogether these psychic reactions. After rehabilitation is complete, a kind of compensatory euphoria becomes a more or less permanent feature of the patient's personality. Clerf⁵ states that "the rehabilitated laryngectomized patient usually becomes an extrovert and exhibitionist and not only does his job well but literally becomes his brother's keeper. I have never seen more enthusiastic people in my life."

It should be remembered that the larynx is not, par excellence, the organ of speech, but only the housing of the vibrating reeds. Exquisite as is the cerebral control of laryngeal function, far more innervation is required to control the *articulating* mechanism of tongue and pharynx. Laryngectomy does not, therefore, rob the patient of the essentials of the uniquely human function of communication by articulate speech. He must learn to use a different vibratory mechanism which requires a new set of neuromuscular patterns in breath control and swallowing. It is worthy of mention that removal of the epiglottis and hyoid bone results in a firmer and more satisfactorily vibrating hypopharyngeal scar than is obtained by preserving these structures.

CASE REPORT

The following case report illustrates many of the problems discussed above.

This 55-year-old man first noted a "drawing sensa-

tion in the muscles of the left side of the throat" and pain in his palate on swallowing in 1949. This became worse in 1951, the patient becoming hoarse around Christmas time. Hoarseness was at first intermittent and associated with colds, but it gradually became worse. Saliva which the patient could not expel collected in the hypopharynx. Drinking hot fluids afforded some relief. The patient saw a laryngologist who was unable to view the larynx adequately with a mirror. The patient declined direct laryngoscopy. During the ensuing six months he became gradually worse, suffering from frequent choking spells which eventually brought him to me.

Past history revealed that prior to the present illness the patient had "never been sick for a day" in his life. He had been a truck driver for 21 years. He drank heavily and had smoked two to three packs of cigarettes daily since the age of six.

He was a ruddy-faced, well preserved man about six feet three inches in height. Weight had fallen from an average 235 to 208 $\frac{1}{4}$ pounds. His neck was thick and short. His voice was weak and hoarse. The nose was obstructed by a severe right sided septal deviation. The mouth was edentulous.

The larynx presented a dirty, greyish, ragged lesion involving the full length of the left true vocal cord. Anteriorly, the tumor crossed the commissure slightly; posteriorly, it involved the arytenoid. Superiorly, all of the left false cord and part of the aryepiglottic fold were involved. Despite the great surface extent of the tumor, the left vocal cord was freely movable. This was the more surprising in view of the fact that laminography of the larynx showed a large tumor mass (the size of a prune) occupying the left hemilarynx and completely obliterating the left laryngeal ventricle. No lymph nodes were clinically palpable in the neck. The remainder of the examination was negative. Biopsy showed squamous carcinoma, grade II.

On July 12, 1952, the patient was given a bilateral deep cervical nerve block, and a U-shaped mastoid-to-mastoid flap which included the platysma was dissected up to the under edge of the mandible. An endotracheal cuff was introduced through an incision in the cricothyroid membrane, and the patient was put to sleep with intravenous pentothal sodium which was used exclusively for the remainder of the operation.

On exploration of the left neck, a group of enlarged, firm nodes was found along the mid-portion of the internal jugular vein. (It will be recalled that these nodes were not clinically palpable.) An extensive resection was carried out, which included the larynx with epiglottis and half the vallecula, all strap muscles, the entire hyoid bone, and the entire left pyriform sinus (including its lateral wall) en bloc

with a left radical neck dissection. The internal jugular vein before ligation measured an inch and a quarter in diameter.

After inserting a Levine tube, every available scrap of tissue—inferior constrictor, fascia, etc., was utilized to reinforce the esophageal closure. The thyroid gland was divided in mid-isthmus and the halves everted and sutured to the carotid sheaths to make room for a large tracheostome. Around the stoma, skin and tracheal mucosa were united by some 40-odd fine silk sutures placed 1 mm. apart. An 18 French catheter was placed in each carotid gutter and a number 12 laryngectomy tube inserted in the stoma. The patient received five pints of blood and 2500 cc. of intravenous fluids.

On the first postoperative day the patient walked to the bathroom. In addition to daily intramuscular penicillin, the catheters in the neck were irrigated twice daily with 250 cc. normal saline containing 400,000 units of penicillin. This was followed by one half hour of hot compresses to the neck. Esophageal fistula occurred despite the care exercised in closing the wound.

On July 16, the patient developed a slight left-sided surgical mumps. Penicillin was replaced by aureomycin, and three x-ray treatments were given over the left parotid gland. The laryngectomy tube was removed on July 22. By August 18, Dakin's solution introduced through the catheters in the carotid gutters could no longer be tasted, and clear fluids by mouth were begun without leakage. The patient was discharged from the hospital on August 20, and an intensive course of deep x-ray therapy was undertaken by Dr. James Kelly, Sr., of Omaha.

In December 1952, the patient developed a small fistula on the left lateral aspect of the neck which, on biopsy, showed only necrosis but no carcinoma. Healing occurred rapidly beneath a simple dressing of bacitracin. The patient then developed a tracheitis sicca which necessitated a number of bronchoscopies for removal of crusts. It was found useful to dry the trachea with cotton and then directly apply lanolin ointment to it. In addition, the patient's quarters were humidified as much as possible.

Detailed description of the surgical specimen will be omitted for the sake of brevity. Suffice it to say that carcinoma had invaded the pre-epiglottic fat. It had also penetrated the left aryepiglottic fold and was on the point of rupturing into the left pyriform sinus. There was widespread cervical node involvement on the left. Histologically, the lesion was squamous carcinoma showing acanthosis and pearl formation, with more anaplasia in the deeper layers.

Some psychologic observations may not be amiss here. This patient understood nothing of the art of being sick, never having previously experienced sick-

ness. He was in serious marital difficulties and was depressed over them. After his recovery from the operation, he told the physician that he had neither expected nor hoped to survive it. He adamantly rejected all efforts to teach him to use the buccoesophageal voice. He would grimace and gesticulate wildly in an effort to make himself understood without speech, and end by angrily pencilling a scarcely legible note. After a year, he reluctantly accepted an artificial larynx which he used as little as possible. In the spring of 1953, the patient and his wife were divorced.

A year later, in June 1954, the patient was hospitalized at the Veterans Administration Hospital in Lincoln, Nebraska, remaining for three months for speech training at the University of Nebraska Speech and Hearing Clinic. He made fair progress. During this hospitalization, an indurated, slightly tender mass was noted in the left mastoid region. In July, this was surgically removed in Lincoln and found to be merely an old, organized hematoma. The patient was again hospitalized for further speech training from

September, 1954 to March, 1955. Since his discharge he has remained entirely well and is working at a sedentary occupation. Doubtless his depressed state prior to surgery interfered with the "mourning process" which should have followed it, and this fact drastically retarded his rehabilitation.

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A Medical Student Looks at Blue Shield

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As the physician of the future, the medical student of today looks at the present as he reads of the past and dreams of tomorrow. His observation of the present is preparation for his participation in the future. He relates his personal struggle to the strivings of the profession. Professional problems become personal problems. And he knows that when he becomes a functioning part of medicine, personal problems will then be professional problems. Therefore, he is more honest with himself if he analyzes a problem that will soon be his with respect for his own feelings instead of attempting to achieve objectivity through superficial elimination of subjectivity. It is with this attitude that this medical student looks at Blue Shield.

Medicine is a science of service. It was created by man, for man, to protect man's most precious possession, life. How to serve his fellow man most effec-

tively is the universal challenge of medicine. It is the personal goal of the physician. In a democracy dedicated to the proposition that all men have the right to equal opportunity, the proportions of the challenge are enormous.

Accepting the challenge as a personal problem, the medical student asks of himself, how should this be met?

In answer, he focuses first on the primary participants in the practice of medicine, the physician and his patient. Their relationship is the essence of medicine.

He narrows his scope of observation and considers this relationship in terms of the patient. First and foremost, the patient has the right to medical care when he needs it. Neither the quantity nor the quality of care should be solely dependent on the patient's economic status. For this care to be fully effective, anxiety stress which can complicate or create illness must be kept to a minimum. Doubt in the doctor and concern over cost are frequent causes of preventable

This essay won second prize in a national contest sponsored by Blue Shield and the Student American Medical Association. Mr. Younger is a student at the University of California at Los Angeles School of Medicine.

anxiety. If the patient finds that he lacks faith in his physician, he should have the right to choose another in whom he can have confidence. He should be able to direct all of his energy toward getting well and not have it consumed by worry over the bill.

The primary responsibility for the physician-patient relationship rests with the physician. It is essential that he be able to concentrate his skill and concern on each patient as an individual. He must have the freedom to decide, on the basis of his knowledge and experience, how best to treat every person who comes to him for care. He must have the opportunity to establish the closeness necessary for communication. He must be in a position where he is free to serve the needs of the patient and practice in a manner that is satisfying to himself.

The relationship of physician and patient that is based on mutual respect benefits both and forms a solid foundation for sound medical practice.

This, then, is the answer for the student.

But how have others answered the question in practice?

Since early in the history of medicine post-paid private practice has been the dominant form of medical service, and it continues to the present day. This is a system whereby a patient chooses a doctor when in need of medical care. The care is prescribed for the patient by the physician. The patient is billed by the physician according to the services rendered. With complete freedom of choice, the patient may select a doctor in whom he has confidence. He has the right to solicit different or additional medical advice. These factors, however, are limited by the condition of his pocketbook. The request for needed medical care is frequently postponed or never made because the patient may feel that it is easier to be sick than to worry about the doctor bill. His freedom of choice is limited by his income tax bracket. He may lack confidence in his doctor because he *can* afford him. If more help or treatment is indicated, he can get it *if* he can pay more for it.

The core of private practice is the patient-physician relationship. The physician is able to serve his patient with skill and understanding, since he is free to devote the time he feels necessary to the individual patient. He is free to prescribe the therapy that his knowledge and experience indicate as appropriate. However, as a human being, the doctor is concerned about his own economic welfare. Therefore, of necessity, the patient's ability to pay is a factor in their relationship. The concern of a patient over his projected bill is obvious to the physician. It is important that the physician relieve this anxiety in order that he and the patient may work together on the primary problem, the patient's illness. The time consumed in relieving this anxiety could better be devoted to relief

of the illness. His prescription for medication or therapy may have to be bounded by how much the patient can pay, not necessarily by what would be most beneficial.

Another form of service is found in the prepaid group practice medical plan. In this type of plan, integrated groups of specialists are brought together under one roof. Potential patients subscribe to the services of these doctors for a fixed fee, usually payable monthly. The patient has the right to medical care when he needs it, according to the terms of the contract. Potentially, the services of every physician in the organization are available to him. The prepaid factor of this plan helps to relieve the patient's anxiety regarding finances. The services of this type of plan are limited to those living within the area where a major facility is located.

The member patient's choice of a physician is limited to members of the organization. It is frequently further limited by organizational policies or clerical procedures. For example, an emergency request for Doctor A is answered by the switchboard operator with, "So sorry, only Doctor Z is on call tonight." A call at the office may provide the information that Doctor B is no longer with the organization and Doctor C has no available appointments, but Doctor Y has a cancellation. As the patient passes from one to another on this medical assembly line, he begins to feel more like a part than a person. The recipient of conveyor belt care gets lost in the shuffle of charts and routines. He is a patient that passes through, not a person for whom the physician cares, for whom he works, and to whom he devotes the summary of his years of experience to help. There is little opportunity for the patient to feel secure through his relationship with the physician.

As an employee, the physician is more responsible to the organization than to the patient. His practice is regimented rather than self-regulated. The unique professional challenge of medicine is gone. The physician's identity is lost. He is a man with a job to do.

Compulsory government controlled health insurance and socialized medicine have been suggestions made by some. Cost of care to the individual would seemingly be minimized, but would, of necessity, be reflected in much higher taxes to all. The American system of free enterprise would be corrupted by such a plan involving the sacrifice of incentive, initiative, and individuality. Without these essential elements, the profession of medicine, as the healthiest nation in the world knows it today, would cease to exist.

Blue Shield, a nonprofit organization, conceived and controlled by the medical profession, offers still another plan in the form of voluntary health insurance. In Blue Shield, a subscriber insures medical treatment in advance by depositing small premiums

at regular intervals. When in need of medical treatment, he consults a physician of his own choice, who is paid entirely, or in part, directly from the Blue Shield fund. Relieved of financial stress, a patient will not put off seeing his doctor at the first symptom of illness. This will enable the physician to work more effectively with him. Secure in the knowledge that medical care is available when he needs it, and assured that it is not beyond his means, the stress of illness is not increased by anxiety over post-emergency costs. A Blue Shield subscriber knows that he himself may choose the physician in whom he has confidence. Thus the personal relationship so necessary to healing is on a stronger basis because the physician he goes to see as a Blue Shield member is *his* doctor.

The physician who uses Blue Shield service develops and regulates his own practice. Initiative is an asset, not a liability. Personal identity is not lost. Professional integrity is maintained at his own standards. As in all private practice, the physician's primary responsibility is to the patient he serves. Since the practice is his own, he is able to have the type of relationship with his patient that he desires. A Blue Shield subscriber is *his* patient and the personal satisfaction of purposeful practice is his. When a Blue Shield patient comes to the physician, the fee communication barrier is lowered because the Blue Shield schedule of fees provides the basis for opening discussion.

Essentially, Blue Shield serves as a reservoir of funds to which the patient deposits regularly and from which the physician withdraws when he gives treatment. It is operated solely for the benefit of the patient and the physician. No profit-seeking third party is involved. It is not without flaws, but it is flexible. Changes, as needed, can be made through the physicians who direct its operation.

This student has compared Blue Shield with other forms of practice on the basis of his own standards of service. He has found no plan without merit, and of course, no plan that is perfect.

He has found in Blue Shield a plan that preserves the vital personal relationship between patient and physician, provides a professionally led program of competent care, protects the patient from the financial catastrophe of illness and injury, promotes physician incentive and initiative, and presupposes progress by a flexible form of operation.

This student of medicine looks forward to a professional career in which his personal satisfaction will come from his professional ability to help others. Blue Shield fits into such a professional career, helping him meet the challenge of providing medical care for his fellow man.

This medical student today is looking forward to becoming a Blue Shield physician of the future.

We will endure . . . if we accept our obligation to maintain stability in our world by conserving the traditions and institutions of the past and encouraging the orderly forces of progress. Those of us who assume that the capitalist society can and must endure rally around these standards. We believe in property but know it can flourish only when innovation has free rein and new enterprises (with the personal rewards that must go with them) can emerge. We are devoted to the idea of equality . . . of opportunity to rise. We are committed to the idea of man's rationality and his ability to make free choices for his own betterment and that of society.

—Louis M. Hacker



Small-pox is a disease which has been known in India and China from the earliest days of recorded history, but it was not until about the year 910 that a definite account of the disease was written by Rhazes (his full name was Abū Becr Mohammed Ibn Zacaríyá Ar-Rází), a physician in Baghdad.

"We will now begin therefore by mentioning the efficient cause of this distemper, and why hardly anyone escapes it; . . .

"I say then that every man, from the time of his birth till he arrives at old age, is continually tending to dryness; and for this reason the blood of children and infants is much moister than the blood of young men, and still more so than that of old men. And besides this it is much hotter; as Galen testifies in his Commentary on the 'Aphorisms'. . . For this reason the blood of infants and children may be compared to must, in which the coction leading to perfect ripeness has not yet begun, nor the movement towards fermentation taken place; the blood of young men may be compared to must, which has already fermented and made a hissing noise, and has thrown out abundant vapours and its superfluous parts, like wine which is now still and quiet and arrived at its full strength; and as to the blood of old men, it may be compared to wine which has now lost its strength and is beginning to grow vapid and sour.

"Now the Small-Pox arises when the blood putrefies and ferments, so that the superfluous vapours are thrown out of it, and it is changed from the blood of infants, which is like must, into the blood of young men, which is like wine perfectly ripened; and the Small-Pox itself may be compared to the fermentation and the hissing noise which take place in must at that time. And this is the reason why children, especially males, rarely escape being seized with this disease, because it is impossible to prevent the blood's changing from this state into its second state, just as it is impossible to prevent must (whose nature it is to make a hissing noise and to ferment,) from

changing into the state which happens to it after its making a hissing noise and its fermentation. And the temperament of an infant or child is seldom such that it is possible for its blood to be changed from the first state into the second by little and little, and orderly, and slowly, so that this fermentation and hissing noise should not show itself in the blood; for a temperament, to change thus gradually, should be cold and dry; whereas that of children is just the contrary, as is also their diet, seeing that the food of infants consists of milk; and as for children, although their food does not consist of milk, yet it is nearer to it than is that of other ages; there is also a greater mixture in their food, and more movement after it; for which reason it is seldom that a child escapes this disease. . . .

"As to young men, whereas their blood is already passed into the second state, its maturation is established, and the superfluous particles of moisture which necessarily cause putrefaction are now exhaled; hence it follows that this disease only happens to a few individuals among them, that is, to those whose vascular system abounds with too much moisture, or is corrupt in quality with a violent inflammation; or who in their childhood have had the Chicken-Pox, whereby the transition of the blood from the first into the second state has not been perfected. . . .

"And as for old men, the Small-Pox seldom happens to them except in pestilential, putrid, and malignant constitutions of the air, in which this disease is chiefly prevalent. For a putrid air, which has an undue proportion of heat and moisture, and also an inflamed air, promotes the eruption of the disease, by converting the spirit in the two ventricles of the heart to its own temperament, and then by means of the heart converting the whole of the blood in the arteries into a state of corruption like itself. . . ."

It sounds a little complicated, but isn't it always complicated when we try to explain something which we ourselves don't understand?—O.R.C.

PRESIDENT'S PAGE

DEAR DOCTOR:

God, in His infinite wisdom, chose to take John Porter. His place is empty.

Gone is a devoted husband and father. Stilled is his unbounded curiosity, his interest in everything about him. Silent is his original and picturesque eloquence.

Gone is John Porter the physician. Departed is his uncompromising idealism, his impassioned crusade for ethics and high standards of care, his devotion to his profession.

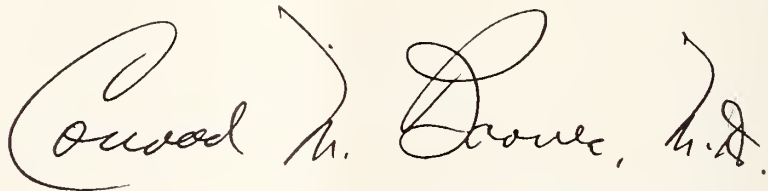
Gone is John Porter president, at the beginning of a brilliantly planned year.

Gone—but no. In the memory of those who loved him, he is not away. In the lives of those to whom his life was an inspiration, he has an immortality on earth. His ideals continue to live among us. Our president is with us yet.

God, in His infinite wisdom, has given us John Porter's example to have with us always and forever.

It is for us, the living, to carry on with John Porter's plans for the Kansas Medical Society. The committees will stand as appointed with, possibly, an additional member being added to some. We must persevere that John Porter's example be not in vain. To this purpose I dedicate myself, so that, with your help, Kansas medicine may progress. May we, therefore, find increased satisfaction in the exercising of our profession.

Sincerely, in the Practice of the Art,

A handwritten signature in dark ink, reading "Conrad M. Barnes, M.D." The signature is written in a cursive, flowing style. The first name "Conrad" is written with a large, sweeping initial 'C'. The middle initial "M." is smaller and more compact. The last name "Barnes" is written with a large, sweeping initial 'B'. The suffix "M.D." is written at the end of the signature.

CONRAD M. BARNES, M.D.

Time May Have Been Cheated In an Untimely End

Today, over the state, they are saying that John McGill Porter of Concordia, president of the state medical society, died too young. But I wonder.

He died too young for his family and friends who loved him, and for his patients who leaned on him heavily. He died too young from the point of the medical society which had counted on the guidance of his intellect and his good judgment. But whether he died too young from his own point of view I seriously doubt.

Who is to say what is "too young"? John, with his intellectual honesty, would be the first to admit that science knows little or nothing about the twin mysteries of time and space. Today we take wings in an airplane and we fly into the future, or we fly in another direction and hold back the dawn. What is a day or a year? And what are 56 years—which was the span of John's life?

I only know that within those 56 years he did an incredible amount of living, and he did it zestfully. He accomplished more in the 26 years of his medical practice

than most men accomplish in 50 years. He learned about history, mythology, philosophy, natural science. For he read avidly in non-professional literature. He participated in two wars, he had unusual experience in travel and in foreign study.

For his hungry mind was always reaching out for experience. He crowded his leisure time with enjoyment of his family, his reading, his hobbies. He lived to know and love his grandchildren. And he realized some of his dearest ambitions.

What is old and what is young? I think John Porter lived a very long life indeed. And he did it without ever walking the tragic down-hill road, without ever knowing those last years

spent in the shadow of personal loss and loneliness, without ever knowing the diminishing vitality, the faltering step, the dimming eye. In a way John cheated the thing we call time. For he lived at least 90 years, yet he died a vigorous man in the prime of life.—Marion Ellet in *Concordia Blade-Empire*.



JOHN M. PORTER, M.D.

EDITORIAL COMMENT

CULTS

Editor's Note: Dr. John M. Porter wrote this thoughtful, personal opinion on the subject of cults after attending a meeting in the interest of the Kansas Medical Society, only a few days over a month before his death. Believing the membership has an especial interest in this last formal extended writing by the president, it is printed here just as Doctor Porter wrote it.

July 23, 1955

Oliver Ebel, Executive Secretary,
Kansas Medical Society,
315 West Fourth Street,
Topeka, Kansas.

Dear Oliver:

This has been an exhausting trip but perhaps I can set down for you some of my ideas regarding cults and the practice of medicine. These are entirely unsolicited and like other forms of free advice may be worth exactly what they cost. However, writing it out will help to clarify my own ideas and if you can find any occasion to use the result, I hope you will do so.

These are individual opinions but I am sure they are shared by many other members of the Kansas Medical Society.

The practice of medicine is, of course, an art and consists and always will consist of the ministration of one individual to another. From the dawn of history until the relatively recent past this ministration has been interwoven and confused with the magical or with the priestly function. Personal magnetism, suggestion and a mutual feeling of confidence played a large part in "cures" or the alleviation of symptoms. The laying on of hands was often essential. Conceivably, there could be as many plans for treatment as there were "medicine men."

In the past 50 years all of this has become changed due to the increasing reliance of medicine on exact science. A patient's confidence is still a highly desirable thing but a fighting, struggling child will respond to diphtheria antitoxin and an inflamed appendix can be cured by good surgery even though its possessor believes only in divine healing. The comatose diabetic may never see the resident who saves his life and the asthmatic patient may be too sick to know who treats him. Modern surgery has become such a matter of team work that it would

be difficult or impossible to divide the credit for success between the anesthesiologist, the various members of the surgical team, the pathologist who examines a frozen section and even the research worker whose animal surgery made the operation possible.

What part does the cultist play in all this? My answer would be "none." In functional disorders, incurable disease and in the all-important matter of reassurance in minor affairs he might seem to have a place but what assurance is there that the comforting, simple and readily available laying on of hands may not take place in cases of early malignancy, dangerous psychoses or these border line cases that tax the ingenuity of our best diagnosticians? Recognition of many diseases depends entirely on a high index of suspicion coupled with a scrupulous honesty that refuses to settle for the temporary relief of "manipulation." A few weeks frittered away in unscientific handling can very easily "fritter away" a life.

To understand these cults and their widespread acceptance it is necessary to examine the schooling of the physician and the universal reaction of the uneducated to scientific training. The student, immature and over-anxious, wants contact with the patient, he wants dramatic cures, he wants immediate rewards in terms of money and prestige. The long years in the laboratories, the cautious approach to human life and welfare, the long supervision of internship and residency are irksome and apparently illogical to many minds. When someone offers a short cut to the distant goal, a "secret" way to avoid the tiresome training and a quick answer to obscure questions, many simple-minded souls and some others more ambitious than honest grasp at these easy solutions. In this way the alchemists bypassed the harsh discipline of chemistry that finally learned how to transmute metals.

The astrologer tried the same plan with astronomy and managed to avoid a lot of mathematical drudgery. Medicine has been repeatedly attacked by cults with wonderful names and strange theories. This will probably always be so but this is no reason to capitulate. Truth has a way of being perpetuated that no pat theory however glibly explained or however apparently plausible can imitate. Science, of course, is merely a collection of truths assembled into working order.

It has been argued that homeopathy was absorbed by medicine and that other and newer types of capsule wisdom should be similarly absorbed. Homeopathy, however, never left the discipline of medicine and its students studied as long and as hard as any other students of medicine. The absurd con-

clusion that "like cures like" withered on the vine and was forgotten as homeopathy was forgotten, it was never absorbed into medicine.

Scientific medicine did learn two things from homeopathy, one that massive doses of drugs which had become fashionable were unnecessary and could be dangerous and second, that experimental pharmacology was a better measure of what drugs would do than some opinion based on the ideas of Galen. It is strange that such an odd and irrational cult should justify its brief existence by these two valuable concepts.

If more recent cults could claim any such virtues their other absurd claims could be more easily overlooked. No iota of progress can be honestly claimed by osteopathy and chiropractic in the many years of their existence. Even with their attention focused on the spinal column they failed to recognize the importance of injury to the intervertebral disc and it took a classmate of mine to describe these lesions for the first time.

Going from theory to practice we face the fact that cultists of various sorts are entrenched in most states of the union, practicing medicine and surgery either legally or as bootleggers. Often this knowledge was acquired in a pathetic imitation of a medical school but was always combined with instruction in the magic laying on of hands which even their teachers admit has no scientific basis. Graduate work for these practitioners is limited or non-existent and much of their "education" is through the lay press or from the advice of salesmen.

Several fallacies have recently arisen. One is that in attacking the osteopath's attempts to practice medicine and surgery we are ignoring more dangerous and less educated cults. This means to me embracing professionally a quack who is made up in good imitation of a physician and one whom many people think of only as another "variety" of doctor, in order to condemn more thoroughly the uneducated and untrained chiropractor whom none but the most ignorant would confuse with a physician. To my way of thinking the wolf in the best imitation of sheep-skin is the most dangerous.

Another mistake is to assume that if educational opportunities are equal the cultist must be as well qualified as a physician. This can never be true because the cultist's thinking is always biased by the mistaken, unscientific assumption of his cult. Whenever the going gets rough—tricky surgery, newer therapeutics, difficult diagnosis—the cultist always has an easy way out. If the education were equal the school would be a medical school, although probably class B or C.

Claims have been made that osteopaths can hold

down locations in border line locations that would be unattractive to a well-trained physician. This may be true but supplies the unfortunate sick of those communities with a sub-standard sort of medical care. In many instances the osteopath able to enter practice earlier because of shorter and less expensive training becomes entrenched in a town which could otherwise attract a physician. I know of any number of communities in Kansas which could support a physician if all their medical needs were channeled through his office but when the older established practitioner skims off the cream what is left is insufficient to keep a doctor happy and busy or even alive.

I have no quarrel with the cultist who follows his beliefs whether they are Christian Science or naturopathy. The trouble comes when he wants to practice medicine without the training. The answer in my opinion is to allow only graduates of medical schools to practice medicine. We all know of respected physicians who tried osteopathy only to find it inadequate and who then studied medicine and became true physicians. I would recommend this to any graduate of a cultist school who feels he wants to do more than he is trained or licensed to do.

Very truly yours,

/s/ John

J. M. PORTER, M.D.
President

JMP:br

PORTER MEMORIAL

A letter to the membership of the Kansas Medical Society has announced the creation of the John M. Porter Memorial Student Loan Fund as a project of the Committee on Endowment.

Money from the fund will be distributed in the form of loans to junior and senior students at the University of Kansas School of Medicine. The continuing use of the fund will serve as a memorial to Dr. John M. Porter, whose death last month during his term of office as president of the Society has deprived us of the guidance of a physician known for his idealism, integrity, and unbounded interest in the future of medicine.

Contributions may be sent to the Society office with checks made payable to Porter Memorial. Those who wish to claim tax exemption for their gifts to the fund may make checks payable to American Medical Education Foundation with an accompanying note stating that the amount is intended for the John M. Porter Memorial Student Loan Fund at the University of Kansas School of Medicine.

Quiz
for
doctors

ACF

(you probably know every answer!)

Q. Which is today's most widely prescribed broad-spectrum antibiotic?

A. ACHROMYCIN — it's first by many thousands of prescriptions.

Q. What are some of the advantages of ACHROMYCIN?

A. Wide spectrum of effectiveness.
Rapid diffusion and penetration.
Negligible side effects.

Q. Exactly how broad is the spectrum of ACHROMYCIN?

A. It has proved effective against a wide variety of infections, caused by Gram-positive and Gram-negative bacteria, rickettsia, and certain viruses and protozoa.

Q. In what way are ACHROMYCIN Capsules advantageous?

A. For rapid and complete absorption they are dry-filled, sealed capsules (a Lederle exclusive!) No oils, no paste...tamperproof.

Q. Who makes ACHROMYCIN?

A. It is produced — every gram — under rigid quality control in Lederle's own laboratories and is available only under the Lederle label.

ACHROMYCIN*

Hydrochloride
Tetracycline HCl Lederle



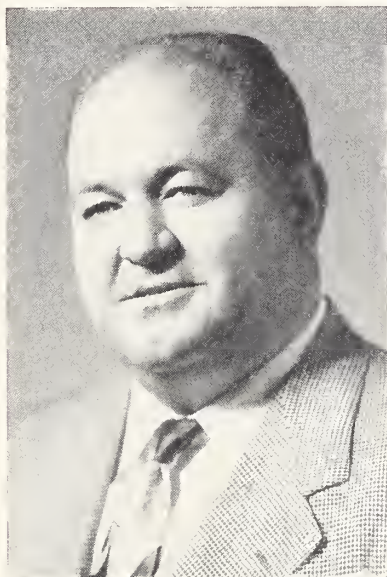
LEDERLE LABORATORIES DIVISION AMERICAN *Cyanamid* COMPANY PEARL RIVER, NEW YORK

*REG. U.S. PAT. OFF.

OUR NEW PRESIDENT

Dr. Conrad M. Barnes, Seneca, who was elected first vice-president of the Kansas Medical Society at its meeting in May, took office as president of the Society on September 5, after the death of Dr. John M. Porter. His first official act was endorsement of a project of the Committee on Endowment creating the John M. Porter Memorial Student Loan Fund.

No introduction of Dr. Barnes is necessary, but a review of his accomplishments and interests will serve to record biographical facts that may not be



CONRAD M. BARNES, M.D.

generally known to the membership. He was graduated from the University of Kansas School of Medicine in 1936. Since then his services as a physician have been in the field of general practice, which he construes as meaning treatment of the whole person, not the complaint. In his home community he is regarded as a counselor, philosopher, and friend as well as a physician.

About ten years ago, when the Society established a Committee on Rural Health, Dr. Barnes was chosen as its first chairman. At the invitation of the Council on Rural Health of the American Medical Association, he attended a meeting at which the National Council on Rural Health was organized, and since that time he has been generous with his abilities and energies in that field. He was one of the speakers at the national council's meeting in 1954 and later presented his address over the radio on the National Farm and Home Hour.

The Blue Shield plan has benefited from Dr. Barnes' interest, and he served Kansas Physicians' Service as its second president, remaining in that

office for a year and a half. He is also active in the Kansas Chapter of the American Academy of General Practice, in the preceptorship program of the University of Kansas School of Medicine, and in the medical school itself. In addition he gives freely of himself to his county medical society and was in part responsible for the construction of the Seneca Hospital.

Dr. Barnes' personal interests are as varied as his services to medicine. As a lover of fine music he has assembled a record library that is outstanding. He possesses a voice of pleasing quality and enjoys himself thoroughly when harmonizing with a quartet or larger group. He can describe the art of glass blowing, especially as it concerns his collection of rare bottles of all types, interesting because of their history or design.

Members of the Society are confident they will be guided wisely and well during Dr. Barnes' administration. As we wish him well, we pledge to him our wholehearted cooperation and support.

OBSTETRICAL SOCIETY TO MEET

A meeting of the Kansas State Obstetrical Society will be held in Kansas City on Tuesday evening, November 8, a date which will be convenient to many physicians practicing obstetrics and gynecology since a refresher course on that subject will be presented at the University of Kansas Medical Center on November 7, 8, and 9.

The exact time and place of the meeting will be announced to the membership later, but it is known now that Dr. Lawrence Randall, of the Mayo Clinic, Rochester, will be guest speaker. Members are invited to bring their wives to the dinner session.

Any member of the Kansas Medical Society who is interested in obstetrics and gynecology is eligible for membership in the specialty group. A check for \$5.00, payable to the Kansas State Obstetrical Society, covers membership fee. It should be mailed to Dr. Edward Crowley, 435 North Hillside, Wichita, secretary-treasurer.

SURGEONS ELECT OFFICERS

Dr. Thomas P. Butcher, Emporia, was named president of the scientific section of the Kansas Chapter of the American College of Surgeons at a meeting held in Emporia on September 11. Dr. John Grove of Newton was named president-elect, and Dr. Orville R. Clark, Topeka, was elected secretary-treasurer.

Advertisers make possible the publication of this JOURNAL. They will appreciate the patronage of JOURNAL readers.

Clinicopathological Conference

CASE PRESENTATION

Dr. Youmans (neurosurgery resident): This 71-year-old colored man was admitted to KUMC on September 21, 1954, and expired on September 28, 1954. The chief complaint was shortness of breath for two months.

The patient stated that he was well until July, 1953, when he realized that because of weakness of the right arm he could not raise it above a horizontal level. Approximately one month later he developed the habit of dragging his left foot while he walked. By January, 1954, the patient required a cane to walk and eventually used a crutch. Two months prior to admission he became unable to walk because of his knees buckling. He had noted that, intermittently, his muscles "jumped" since January, 1954.

The patient had a past history of the usual childhood diseases without sequelae. He had gonorrhea at age 18 and smallpox at age 25. At about this same age he fell three stories from a window to the sidewalk without apparent injury. At age 48 he was struck on the head by a brick which fell one and one-half stories, causing a "blood clot on the brain" and double pneumonia to develop. Seven years ago he became aware that water made his skin feel like hot grease and had used water as rarely as possible, always following it with baby oil.

Approximately two months prior to admission the patient developed shortness of breath, orthopnea, paroxysmal nocturnal dyspnea, and a hacking cough productive of small amounts of mucoid sputum. He had slept in a sitting position for two months. Moderate swelling in the ankles had been noted for this same period. For the past month he had indigestion and mild constipation. His usual weight was 160 pounds. He had had nocturia four times nightly during the past month. He smoked 50 cigars a week and was a moderate drinker.

The family history was non-contributory except to show that the parents and children were long-lived, the mother dying at 84 and the father at 90 years.

On physical examination, the patient was a well developed, well nourished Negro man who appeared moderately dyspneic. Blood pressure was 120/70, pulse 84 and regular, respirations 28. The pupils were round, equal, and responded to light and accommodation. Accessory teeth were present extending out into the floor of the mouth. There was no cervical, axillary, or inguinal lymphadenopathy.

Edited by Glen R. Shepherd, M.D., and Mahlon Delp, M.D., from recordings of the conference participated in by the departments of medicine, pathology, physical medicine, radiology, and surgery of the University of Kansas Medical Center as well as by the third and fourth year classes of medical students.

Decreased fremitus and breath sounds with dullness to percussion were present bilaterally in the bases with moist rales in the upper lung areas. Point of maximum impulse was not palpated. The area of cardiac dullness was moderately enlarged to percussion. There were no thrills or murmurs.

The liver, kidneys, and spleen were not palpable. No abdominal tenderness was elicited.

Three plus pitting edema of the ankles was present. Deep tendon reflexes were absent on the right upper extremity. Babinsky and Hoffman signs were absent. No sensory changes were elicited. There was marked weakness of all voluntary muscles with complete paralysis of the right upper extremity. Marked atrophy of the small muscles of the hand was present on the right. Fasciculation of the left facial muscles was seen. There was some weakness in the sternocleidomastoids.

Laboratory Examination: Urinalysis: reaction alkaline, specific gravity 1.020, albumin negative, sugar negative, microscopic 5 to 10 pus cells/high power field, occasional hyaline casts. Red blood count was 5,000,000 with 14.5 grams hemoglobin; white blood count 5,040, of which 62 per cent were polys., 32 lymphocytes, 4 eosinophiles, and 2 monocytes. VDRL was reactive with 16 Kolmer units; nonprotein nitrogen 30, creatine 1.2, sugar 80 mgm./100 ml., sodium 134 mEq./L., potassium 6.2 mEq., CO₂ 27 mEq., chlorides 98 mEq./L. Twenty-four hour urine volume was 600 ml.

There is some confusion on the protocol regarding creatinine levels. In the protocol it is marked creatine, and both of these should be marked creatinine. The technique is essentially this: The urine is checked first for creatinine and the value obtained on this was preformed creatinine which was 75. There seems to be some discrepancy on normal values. Values for this laboratory range from 700 to 2000 mgms. per 100 ml. Then the urine is treated with hydrochloric acid and leaded straps, and in this process all of the creatine present is converted to creatinine. It is re-run then as the total amount as recorded here, again as creatinine, not creatine. The total was 152, and the difference between the two values then will be the amount of creatine present in the urine which was 77. In this laboratory the normal range is from 0 to 50 mgms. per 100 ml. Sedimentation rate 18 mm. fall/hr. I¹³¹ uptake 7 per cent. Absence of denervation fibrillation potentials was noted in the electromyogram. Fasciculation potentials were present.

After the patient was admitted to the hospital, initial therapy consisting of low sodium diet, digitoxin, and aminophylline brought prompt response with loss

of the edema and clearing of the lungs. Other therapy consisted of vitamin E, folic acid, and multi-vitamin capsules. Although the rales cleared in the lungs, poor aeration was recognized, and the patient was started on procaine penicillin. He was clinically much improved with correction of the congestive failure, but he continued to be extremely weak and bedfast. On the afternoon of September 27, 1954, the patient developed respiratory distress with poor diaphragmatic excursions. This became more marked the following morning, but he still seemed to be aerating adequately and without cyanosis. Respirations became progressively more shallow until mid-afternoon when he became cold and began sweating profusely. Blood pressure was still in its usual range of approximately 120/70, but it began to fall about two hours later. As the blood pressure began to fall, the patient had a sudden onset of respiratory distress with cardiac arrest. Pounding on the chest brought about resumption of the cardiac rate. The patient was given artificial respiration for a few moments before the heart again stopped. He was placed in a respirator, given nasal oxygen and 1 cc. of 1:2000 prostigmine intramuscularly. The patient died one-half hour later.

Dr. Delp (chairman): Any questions of Dr. Youmans?

Question: What was the mental status of the patient?

Dr. Fuente (neurology resident): He was quite alert. The mental status was considered normal.

Question: Tell us more about this seven years of queer skin sensations.

Answer: That's all the information we have. He found that water in bathing or washing made his skin burn. This bothered him to such an extent that he used it only when he felt he really had to, and he always followed it immediately with talcum powder or baby oil.

Question: Was that all his skin or just his right hand or what?

Answer: It seemed to be generalized over his entire body.

Question: Was this man really a well developed well nourished individual?

Answer: That is why I prefaced my remarks by saying that from gross appearance, if you walked in and looked at him, you would find nothing grossly wrong. He was not an ill developed, malnourished, or an emaciated individual.

Dr. Delp: His weight in March was 158 pounds.

Question: I was wondering about reflexes in the extremities. They were not mentioned in the protocol. How about the extremities and the left arm, or abnormal reflexes?

Dr. Fuente: With the exception of the deep reflexes, there were no reflexes present anywhere.

Question: Was the spinal fluid negative?

Answer: Yes. The spinal fluid washings were negative, the colloidal gold was negative, 2 white blood count, 458 red blood count, total protein 116.

Question: What did his tongue look like?

Answer: His tongue was grossly normal.

Question: What about his eye grounds?

Dr. Fuente: They were normal.

Question: During the hospital course, did the patient complain of pain in the legs or chest?

Dr. Fuente: The patient had no pain.

Question: As concerns reflexes, did you check his abdominal reflexes?

Dr. Fuente: The abdominal reflexes were absent.

Question: Had the patient ever been treated for syphilis?

Dr. Youmans: As far as the chart is concerned, no. He did specify that he had gonorrhea at age 18 and that it was treated.

Dr. Delp: I think that the question had been asked of the patient, and he stated that he had not been treated for syphilis.

Question: About the 450 red cells in the spinal fluid. That wasn't an error in the tap?

Answer: I think you will have to draw your own conclusions as to that.

Question: How long had this patient been seen in the outpatient clinic?

Answer: Since March, 1954.

Question: What did he complain of when he came to the outpatient clinic then?

Dr. Delp: Weakness of the right arm. "Loss of use of the right arm, left leg feels like it locks when walking. Itching over the body following soap." The patient was 68½ inches in height, weighed 158¾ pounds. His temperature was 98.2° F. when he came into the hospital. He had a 52-year-old wife.

Mr. Albert P. Simpson (fourth year student)*: The electrocardiogram standardization is normal, the rate about 86, with regular sinus rhythm. The P waves are normal appearing. PR interval is about 0.18 second, which is the upper limit of normal. QRS interval is not abnormally wide nor tall. My diagnosis would be digitalis effect and left ventricular strain.

Dr. Delp: Is there anything in the electrocardiogram, Simpson, that might portend such a death as described in this patient?

Simpson: Not to me, sir.

Dr. Delp: Dr. Lin, do you have any comments about the electrocardiogram?

Dr. Lin (cardiologist): No, sir.

Dr. Delp: Dr. Tice, do you have any comment about the x-ray films?

Dr. Tice (radiologist): The cervical spine could be a little abnormal. I think the sixth cervical verte-

* Received M.D. degree since this conference, in June, 1955.

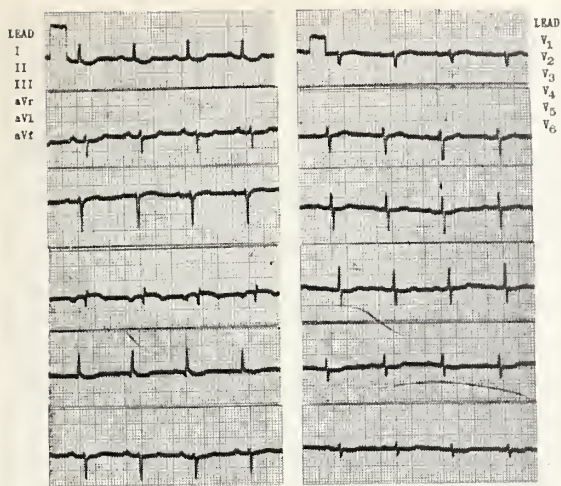


Figure 1. Electrocardiogram taken September 23. Interpretation in text.

bra is depressed, and I think it projects back toward the cervical canal, but I can't be sure. It might be due to osteoarthritis with a proliferation of bone back toward the canal. The mediastinum is definitely widened.

Dr. Delp: As you noted on the protocol, there was an electromyographic tracing made on this patient. I want to call on Dr. Rose to tell us about this tracing in general. We just want the findings, Dr. Rose, not your diagnosis.

Dr. Rose (physical medicine): The resting record

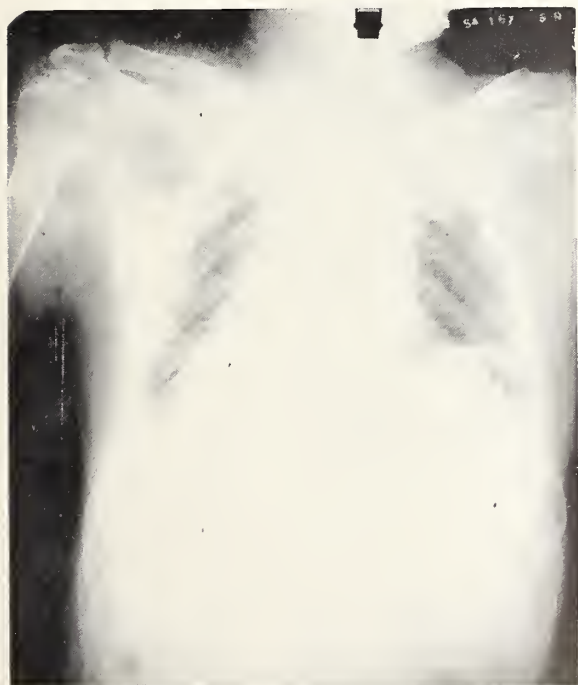


Figure 2. X-ray of chest. Interpretation in text.

in this case was taken with the electrode inserted into the adductor pollicis brevis. This muscle was selected because fasciculations were noted in that muscle. When the patient is at rest the record should be electrically silent, with no potentials noted above the normal level of electrical interference. This was the case in this patient.

There were no spontaneous appearing electrical potentials with the exception of occasional fasciculation potentials. These were manifest by single or occasional runs of two or three reasonably normal appearing motor unit potentials, again appearing in the resting record. When attempting to contract the muscle, a normal height of motor unit potentials

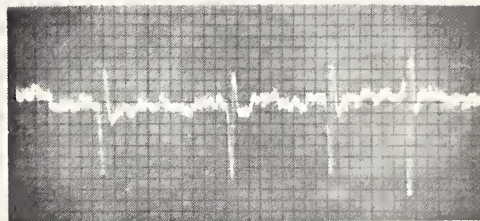
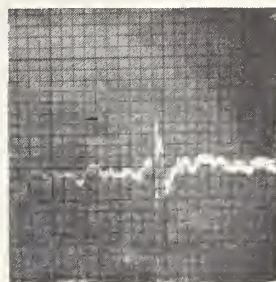


Figure 3. Electromyogram. The upper tracing shows a triphasic fasciculation potential in the resting record. The lower tracing shows the electrical response on maximal voluntary effort which, although indicative of an intact lower motor neuron, demonstrates potentials of reduced frequency, voltage and duration from normal.

should be seen, characterized by a certain given height of voltage and a certain duration of the potential in the same sense as in a normal electrocardiogram. In this patient, the potentials were briefer than normal in duration, of smaller amplitude than normal, and they were of diminished frequency.

Dr. Delp: Thank you, Dr. Rose. If there are any uninitiated here we will ask you to elaborate later concerning this procedure. I suppose that the clinical diagnosis in this case might be perfectly apparent to everybody, especially those people in the third row. I don't think it was entirely apparent to the staff, at least it doesn't seem to be evident from the diagnostic sheet record. It does seem rather strange that a man who had had such vigorous health throughout life should have deteriorated so rapidly after coming into

the hospital. For that reason I would like to have explained exactly why this patient died.

DIFFERENTIAL DIAGNOSIS

Mr. Ralph H. Wood (fourth year student)*: Briefly reviewing a few of the more important features of this case, an aged Negro man entered the hospital with the complaint of shortness of breath and presented the classical symptoms and signs of congestive heart failure. Quite rapidly the congestive heart failure improved upon therapy with digitalis, aminophylline, and a low sodium diet. In spite of this, and even though his congestive failure was corrected, the respiratory distress became progressively worse. Aeration seemed to be exceedingly poor and there was limited movement of the diaphragmatic excursions. The last day, which was the eighth day of hospitalization, his respiratory distress became even more marked and he died.

The present illness was characterized by weakness of the right arm 14 months prior to death and a dragging of the left leg 13 months prior to death. The muscles "jumped" intermittently nine months prior to death. For the past two months he had been unable to walk because both knees buckled. The paresthesia of the skin for seven years is an interesting bit of past history.

On history alone the first and last thing I would think of would be amyotrophic lateral sclerosis. This is a classical history of amyotrophic lateral sclerosis. The significant physical findings are that he had no sensory loss and had complete areflexia (no reflexes at all, pathological or normal, except for the pupils), fasciculations of the left facial muscles, atrophy of the smaller muscles of the right hand, complete paralysis of the right upper extremity, and limited control of the other extremities.

The significant laboratory findings were a positive VDRL with a Kolmer of 16 units, a slightly above normal creatine excretion, an I^{131} uptake of 7 per cent which is below normal, an absence of denervation potentials on the myogram, and a negative spinal tap. I would interpret the spinal fluid red blood cells as due to a traumatic tap which also produced the apparent increase in proteins.

The differential diagnosis, I think, should concern the causes of muscle atrophy, which are many.

Syringomyelia might be thought of, but it usually produces a wasting of the muscles of the upper limb, often bilaterally, and spastic weakness of the lower limbs; fibrillations are rare. Always there is a segmental loss of pain and temperature and always there are sensory changes.

Syphilitic amyotrophies or syphilitic meningomyelitis might be considered by many. Usually this is

accompanied by pain of considerable severity. We do have a history of paresthesia of seven years' duration. Usually the signs of pyramidal degeneration are lacking, and in this patient they were lacking. Usually the patient has pupillary abnormalities, but this patient had normal pupils. Usually there is evidence of syphilis in the cerebrospinal fluid. This patient had no such evidence of syphilis. I would be inclined to rule out these syphilitic diseases.

Spinal cord tumors should be thought of in these patients. Usually such tumors produce muscle atrophy in one or both upper extremities with a spastic paraplegia, which this patient certainly did not have. Always they produce a sensory loss. On spinal tests, there is a positive Quackenstedt test and a high spinal fluid protein, which I don't think this patient would have shown if red cells hadn't been there. Spinal tumors often produce nerve root pain in the arms, which this patient certainly did not have.

This patient could have had a herniated cervical disc, in which case there would have been pain in the arm and only unilateral motor reflex signs. This patient had motor reflex signs absent bilaterally all over the body with fasciculation in the face, which I think definitely rules out a herniated disc.

I would be inclined to rule out a cervical rib practically on the same basis as a herniated cervical disc as well as because of lack of x-ray evidence of a cervical rib.

A radiculitis or inflammation of the spinal nerve is another possibility. This is most common in the fifth cervical nerve, and we did have evidence of arthritis in the cervical x-rays, which could have contributed to this. There is usually a wasting and weakness of muscles which the fifth cervical nerve supplies. This patient had a wasting and weakness of many muscles. Usually such radiculitis is of acute onset. The patient had severe pain. But it is never progressive, whereas our patient became progressively worse.

This patient could have had peroneal muscle atrophy, which is a progressive weakness involving the feet and legs, later spreading to the arms. It never extends above the elbow. The cranial nerves are always normal. This patient had fasciculations of the left facial muscle. Typically there is a foot drop which this patient did not have. Typically it begins at an early age and is strongly hereditary. We have a history of this patient's parents and all his brothers and sisters living to an old age.

This patient conceivably could have had myasthenia gravis with a history of easy fatigue, but there would have been absence of atrophy and fasciculation. Such patients do respond to a test dose of prostigmine; granted this patient received prostigmine, it was probably too late for effectiveness. If it had been given

* Received M.D. degree since this conference, in June, 1955.

earlier, it probably would have increased the fasciculations as most commonly happens in amyotrophic lateral sclerosis.

The muscular dystrophies should be considered briefly. They are ruled out on the basis of the test done by Dr. Rose and on the basis of the excretion of creatine. There is never fasciculation in the muscular dystrophies.

This patient could have had thyrotoxic myopathy except that his I^{131} uptake is 7 per cent and he exhibits no signs of thyrotoxicosis.

Finally, we come to the nuclear amyotrophies or motor neuron diseases. Actually this is a difficult subject to discuss because everyone who has written on it has a different classification. However, this group of diseases or disease, depending on whom you read, is characterized by degenerative changes of the anterior horn cells of the spinal cord and/or the brain stem and pyramidal tract, degeneration due to an upper motor neuron degeneration. There is atrophy and weakness of the affected muscles. There are reflex changes which are variable; they may be spastic and they may be flaccid, depending on where the lesion is the worst. There is characteristically in this group of diseases an absence of sensory changes. Usually they occur in middle life, but they may occur as late as the 70s. There are many cases in the literature of men 70 years old having this group of diseases. They are progressive types of diseases. Usually the length of life is from two to five years after onset, although there are patients on record living as long as 20 years. Many different things are confused, and I will mention four large groups.

One group is progressive muscle atrophy, in which the lesion is essentially in the anterior horn cells of the spinal cord. There is no other motor neuron lesion, there is no lateral tract involvement. This disease offers the best prognosis, many of the patients living to be 20 years old. We know this patient did not have this disease because he did have involvement of the left face, which you would not have from just a cord involvement.

Next there is progressive bulbar paralysis where the degeneration of the anterior horn cells of just the medulla and pons occurs. Usually these patients die in respiratory failure. They have difficulty swallowing and in phonation. They have a typical atrophy of the muscles of the tongue, which, if you see, you will never forget. This patient obviously did not have this. At least he didn't have the tongue muscle atrophy.

Another group of these diseases is primary lateral sclerosis, which is due to an upper motor neuron lesion with secondary sclerosis and demyelination of the lateral corticospinal tract. This patient obviously did not have this disease alone because he did have signs of lower motor neuron disease.

Finally, there is amyotrophic lateral sclerosis, which some people would call all of these diseases. They would put them all under the heading of amyotrophic lateral sclerosis, which is a lower motor neuron degeneration with pyramidal tract involvement and/or medullary involvement. Usually these patients die within two or three years, and the prognosis is usually the worst with this disease.

I am unable to demonstrate pyramidal tract involvement in this patient because of his complete areflexia, yet I still think the pathologist will show us this. So I do think this patient had primary amyotrophic lateral sclerosis, and I think he died in progressive respiratory failure. I cannot rule out syphilitic myopathy though I don't think the patient had this.

The secondary findings which I think the pathologist will show us will probably be a syphilitic aortitis. I hope he didn't have an aneurysm although he could have had. He will have had a pneumonitis due to the prolonged respiratory failure. I think there was also arteriosclerotic heart disease with hypertrophy.

Dr. Delp: Thank you. You know, Wood, you are really reassuring. Medicine is not as difficult as I thought it was.

CLINICAL DISCUSSION

Dr. Delp: Dr. Steegman, would you comment about this patient?

Dr. Steegman (neurologist): I would like to say a few words first about the semantics. I heard the words positive Quackenstedt and positive Babinski. I don't know what a positive and negative something is when you try to define it in terms. I think those signs should be recorded as present or absent. If you are speaking of the spinal fluid dynamic test, there should be some elaboration of what you mean by positive Quackenstedt, because I don't understand what you mean by positive or negative.

This man obviously had a motor disease without sensory change. He did have a peculiar skin complaint, but there was nothing typical about it and he could respond quite adequately to sensory tests. So we decided that his disease had no real sensory component. There were signs of lower motor neuron type of disease indicated by the progressive atrophy and muscle weakness with fasciculation.

Here again, I don't know what a fibrillation potential is. You do not get fibrillation of a muscle in lower motor neuron disease. You get fasciculation, because a single anterior horn cell supplies about 200 muscle fibers. Dr. Rose probably will clear up what he means by that. At least clinically you would get fasciculation of a muscle and not anything you would call fibrillation, the type of thing you see in heart muscle.

This disease was much more extensive, I think, than was indicated by this history. The patient had

marked involvement of the lower extremities with fasciculations in the muscles of the lower extremities. So I think he had a form of lower motor neuron disease of a chronic progressive character that would fit into some sort of progressive spinal muscle atrophy. I believe personally that progressive spinal muscle atrophy and amyotrophic lateral sclerosis are the same disease. I think in each instance you are dealing with anterior horn cell degeneration, and the clinical picture in each individual depends upon which portion of the neuro-axis is involved.

With involvement of the Betz cells of the cortex, which are the large pyramidal type cells, then the upper motor neuron signs are conspicuous. If there is involvement of the anterior horn cells in the spinal cord, then the lower motor neuron signs would be conspicuous. If it happens to occur in the lumbar cord, then the weakness and degeneration will be greater in the lower extremities. If it occurs in the cervical cord, which is the typical place in amyotrophic lateral sclerosis as described in text books in its classical form, then there is weakness and atrophy in the hand and upper extremities and upper motor neuron signs in the lower extremities.

But we see some cases in which the disease is confined to the spinal cord primarily except in its late stage, when it may ascend to the bulb. Then there are signs of bulbar paralysis. Occasionally it may begin in the bulbar region first. Then the bulbar paralysis will be the most conspicuous part of the picture. The involvement of the limb may occur terminally or perhaps not at all, although there may be some minimal changes around the face.

I personally think this man died of respiratory failure. These patients have more and more weakness of the muscles of the thoracic cage. Then anything which increases the effort by a small amount will throw them into uncontrolled anoxia, and they will die rather rapidly. I think that is the most logical explanation in this patient.

Dr. Delp: Dr. Rose, I notice that on the report you sent from your department the diagnosis is stated in this way, "This electromyograph is consistent with the clinical diagnosis of amyotrophic lateral sclerosis." In making this diagnosis, did you disregard others of the possibilities brought up here?

Dr. Rose: The primary point of distinction is based upon the absence of fibrillation potentials. Perhaps since Dr. Steegman raised the question, I may say a word about that.

This is just a matter of definition. From the electromyographic standpoint, we regard fibrillation as pertaining to the activity which we relate to single individual muscle fibrils. Fibrillations are seen in lower motor neuron lesions in which the lower motor neuron is functionally disconnected from the muscle

fibrils. Under those circumstances, one sees characteristic potentials which are of low voltage and are much briefer in duration than the normal motor unit type of potential. They have a different appearance in the cathode ray tracing, and they have a totally different sound when one screens them through the loud speaker.

The resting muscle was tested by three samples in this individual. It was totally silent for fibrillation potentials. There were, however, numerous fasciculation potentials which did appear spontaneously and were regarded as being evidence of "irritation" at the anterior horn cell level. In other words, something stimulated the anterior horn cell. Therefore, we find the normal motor unit type of action, and this very frequently coincides with a clinical twitch of the muscle as well. It, therefore, corresponds to a functional and anatomically intact lower motor neuron; otherwise normal appearing motor unit potentials would not appear.

The absence of fibrillation potentials would indicate that at least in the area sampled there was not a lower motor neuron type of involvement. The presence of a fasciculation potential would indicate that it is not something which is concerned with functional activity, which is part of the normal movement pattern. And, finally, the appearance of the low voltage somewhat briefer in duration than normal motor unit potential would indicate that there is functional integrity of the upper motor neuron, but it is of poorer quality (I use the word in a rough sense) than we normally expect to find. Increasing the effort failed to intensify the interference pattern that was developed. Therefore, this man was using about as much effort in activating the lower motor neuron as he could.

Question: Does fasciculation occur only when the axon body is diseased but not completely knocked out? If it is completely knocked out then you won't get fasciculation?

Dr. Rose: Conceivably it is possible that there be an upper motor neuron lesion which is of an irritating type so that there are efferent and spontaneous discharges across the upper and lower motor neuron tract at the anterior horn cell level in which you would find the appearance of fasciculation potentials. However, I should also point out that you do see them in connection with poliomyelitis as well, so that apparently it may occur in anything which would stimulate the lower motor neuron. It is a stimulatory type of response, and the fibrillation potential has nothing to do with the lower motor neuron.

Dr. Delp: Has anyone else any suggestions?

Dr. Fuente: We knew that this man's vital capacity was dropping, and there was no adequate way to improve it. We discussed the possibility of putting him

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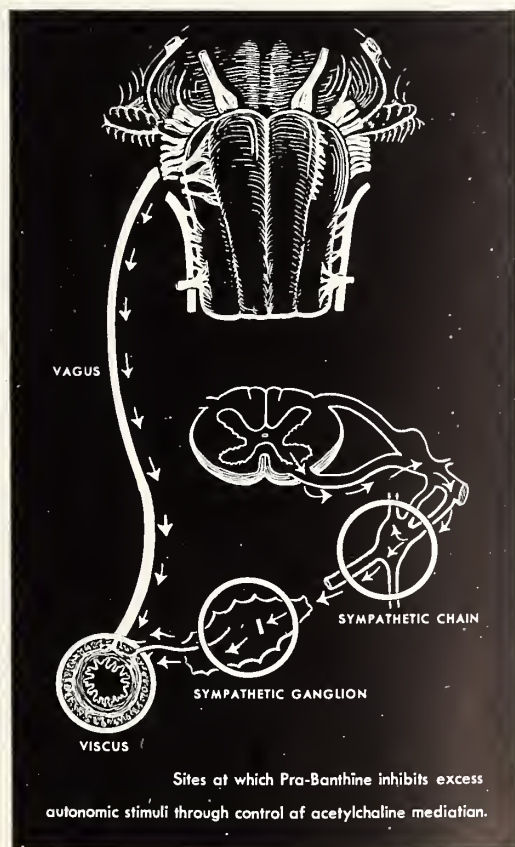
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1. Schwartz I. R.; Lehman, E.; Ostrove, R., and Seibel, J. M.: *Gastroenterology* 25:416 (Nov.) 1953.

2. Roback, R. A., and Beal, J. M.: *Gastroenterology* 25:24 (Sept.) 1953.

SEARLE

in a respirator. He was able to count up to five or six before he became anoxic, which represents about 400 cc. He was extremely dyspneic, and we considered the possibility of having to put him in a respirator. We didn't want to do it considering the nature of his disease.

Dr. Delp: Dr. Lin?

Dr. Lin: Considering the heart tracing, I think I should consider rupture and the other possibility of coronary artery occlusion.

PATHOLOGY REPORT

Dr. Mantz (pathologist): It will be a distinct pleasure to confirm in large part the diagnosis made by the discussant. First, let me say that examination of the body and the first examination of all organs failed to reveal any significant features I could show you. At the completion of the autopsy we were in the dark as to what the nature of the lesion actually was. The pathologists were aware that this clinically was a disease involving the motor tracts, so we then directed our examination primarily to the central nervous system.

The brain was essentially normal, weighing 1240 grams. No localizing lesions were seen. The spinal cord likewise was free of abnormalities, although there was perhaps some slight flattening in the anteroposterior diameter.

Let us now proceed to the examination of the motor tracts throughout their length and perhaps be able to show some abnormalities.

A section of the motor cortex suggested that there had been some loss of the total number of neurons present. This was partially evident in the deeper areas.

A Nissl's stain of deeper brain layers, where Betz cells are normally seen, confirmed the observation, because we found only a few scattered remnants of the pyramidal elements which serve as the upper motor neuron of the motor system. Where Betz cells could be found in any significant numbers, they displayed definite evidence of degeneration, a rather marked swelling in the cytoplasm, and rounding and distortion of the outline. The nuclei seemed fairly normal.

Fat stains of the motor cortex disclosed an excessive amount of fat contained within the cytoplasm of the Betz cells.

A section from the base of the pons in the area of the crossing fibers of the pyramidal tract stained for fat showed a few scattered macrophages containing fat, presumably indicating myelin degeneration of the motor fibers in that area.

A section from the midportion of the medulla in the area of the ninth cranial nerve nucleus showed

some loss or diminution of the normal number of neurons. One wonders if there might have been some palatal weakness in this case.

A section of the sixth nerve root showed some evidence of fatty changes. Now I am aware that this patient did not exhibit oculomotor weakness, and also that such changes are quite unusual in the disease we are attempting to demonstrate. However, the fatty changes would suggest that some degeneration occurred within the sixth nerve, at least in that area.

The major changes, as predicted, were present in the spinal cord. They were best seen in the lateral and ventral columns. A fat stain of the cord section showed extensive symmetrical deposition of free lipid in the region of the lateral columns.

In addition to lateral and ventral column involvement, there was extensive disease in the anterior horn, with diminution in the number of cells and rather extensive alteration in the individual nuclei. A fat stain emphasized the dearth of cells present.

As one might expect, the degenerative changes extended outward along the peripheral nerves. One to the branches of the brachial plexus showed rather marked fibrosis and collagenization of the epineurium,



Figure 4. Photomicrograph of section from posterolateral cervical spinal cord showing marked degeneration of myelin in the lateral columns, which can be recognized as black granules of liberated lipid.

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fibrosis within the nerve itself, and marked diffuse vacuolization along the nerve fibers.

Finally, we saw rather extreme degeneration and atrophy, marked by shrinkage of the fibers which appear excessively shrunken and wavy in outline. There was some interstitial fibrosis. Early interstitial invasion of fat was apparent, and a mild degree of concentration or proliferation of sarcolemma nuclei was present.

These changes are characteristic of the classical picture of amyotrophic lateral sclerosis as the pathologist sees it at autopsy. I do not think that there can be reasonable doubt that the disease actually existed.

The remainder of the examination of the body was not too revealing. The lungs were studied carefully. They were relatively small, weighing only 450 grams, and hardly the lungs expected with a significant degree of cardiac failure with passive congestion. There was extensive adhesion present, marking perhaps the pneumonia that was described in the clinical history. The most dramatic changes, however, were found on microscopic examination.

Scattered throughout many sections of all lobes of both lungs were multiple remote and organizing pulmonary emboli. The results of this process, I believe, were reflected in the larger pulmonary arteries and in the heart. A section of the pulmonary artery, perhaps of the third or fourth order, showed a profound degree of sclerosis of the wall involving primarily the media and the intima with a rather extensive degree of atheromatous deposit.

The heart was not too remarkable in gross appearance. It was not heavy, weighing 350 grams. There was questionable hypertrophy of the left side, but, more significantly, the right heart appeared to be dilated and hypertrophied. The right ventricle measured seven millimeters in thickness. This is the picture that was described by Castleman and Bland and has since come to be known as the Castleman-Bland syndrome. It is a multiple embolization of the pulmonary vascular tree associated with cor pulmonale and certain classical clinical features.

We believe, in summary, that the basic cause of death in this patient was amyotrophic lateral sclerosis. We can contribute nothing to the understanding of the etiology of that process. Perhaps, however, the history does suggest the faint possibility of trauma. We do believe that the termination was related to the neurological disorder, but the fact that it was in some way mediated by this pulmonary embolization is too inviting a possibility to be completely overlooked.

Dr. Delp: Any questions of Dr. Mantz?

Wood: Did the aorta show any evidence of syphilis?

Dr. Mantz: The aorta was entirely free of such evidence. There was a minor degree of senile ectasia with atherosclerosis.

Wood: The mediastinum was not enlarged?

Dr. Mantz: The mediastinum was not significantly enlarged.

Question: Where did the emboli come from?

Dr. Mantz: That is the \$64 question. We never found a source. The possibility that this was derived from the periprostatic veins cannot be overlooked. On the x-ray films, phleboliths were found in the pelvis. We were able to confirm their origin in the periprostatic areas. These may have been old thrombi which gave rise to the emboli, and the emboli were apparently of considerable age.

Nash: There was no coronary artery disease?

Dr. Mantz: Coronary involvement by atherosclerosis was minimal. There was no change in the muscle by histologic examination.

PATHOLOGICAL ANATOMICAL DIAGNOSIS

Primary

Generalized amyotrophic lateral sclerosis with degeneration of ganglion cells and loss of Betz cells in the motor cortex; degeneration of anterior and lateral corticospinal tracts and ventral horn cells (history of progressive muscular weakness beginning in the hands, particularly right, 14 months before death, and of the lower extremities nine months before death).

Atrophy of muscle groups including flexors and extensors of forearm and hands, right and left shoulder girdle, intercostal, flexors and extensors of lower legs and feet, advanced (history of neurological diagnosis of progressive spinal muscular atrophy five days before death and of clinical and electromyographic diagnosis of amyotrophic lateral sclerosis two days before death).

Multiple remote and recanalized emboli of pulmonary arteries, advanced, with remote and recent pulmonary infarcts, slight (history of increasing dyspnea and orthopnea, with paroxysmal nocturnal dyspnea, during the last weeks before death).

Pulmonary arteriosclerosis, moderate.

Hypertrophy of right ventricle of heart.

Atelectasis of the right lower lobe of the lung, advanced, and of all other lobes of the lungs, slight.

Acute passive congestion of kidneys, liver, spleen, stomach, moderate.

Bilateral hydrocele, moderate (history of considerable swelling of the scrotum a few days before death).

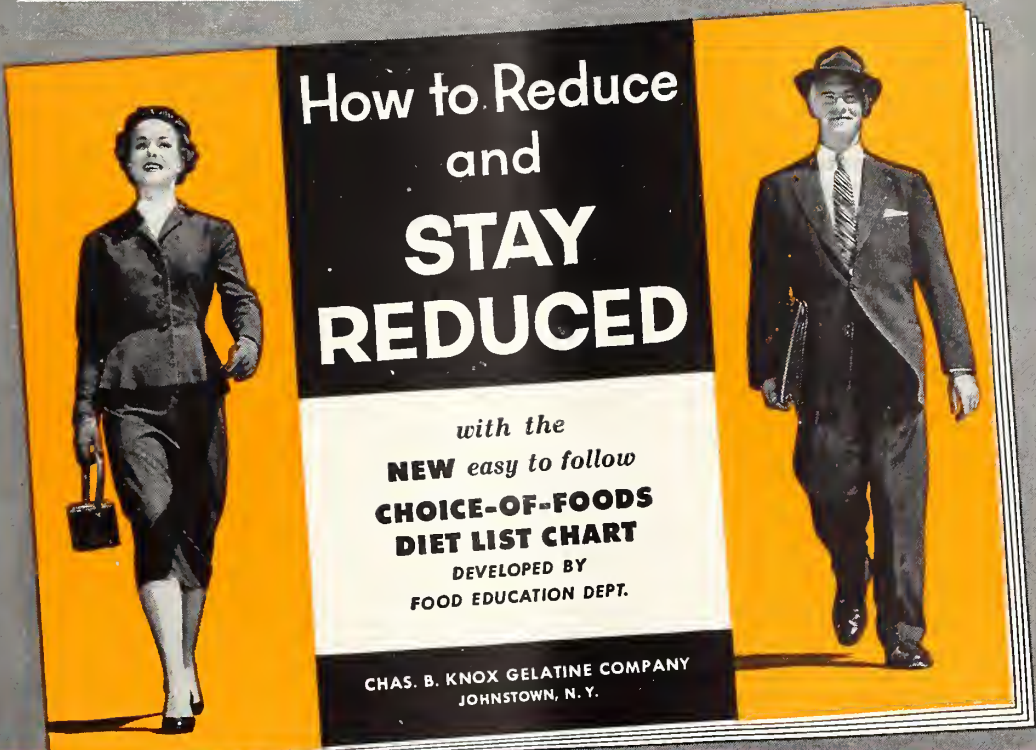
Acute hemorrhagic cystitis, slight.

Vacuolization of the basophilic cells of the pituitary, slight.

Patchy depletion of lipid and tubular deformation of the glomerulosa zone of the adrenal cortex, moderate.

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Nodular adenomatous hyperplasia of the prostate, moderate.

Chronic prostatitis, moderate.

ACTIVITIES OF MEMBERS

Dr. Jerome S. Menaker, Wichita, announces that Dr. Kenneth D. Powers is now associated with him in the practice of obstetrics and gynecology. Dr. Powers, a graduate of the University of Kansas School of Medicine, served his internship at Kansas City (Missouri) General Hospital and was in general practice in Cawker City before taking a residency in obstetrics and gynecology at the University of Kansas Medical Center for three and one-half years.

A feature story about Dr. William L. Warriner, 93-year-old Topeka physician, was published in the October issue of *Coronet*. The article relates that Dr. Warriner, who is still practicing medicine, was a classmate of Dr. Charles Mayo at the old Chicago Medical College, from which both received degrees in 1888.

The Bethel Clinic, Newton, announces that Dr. Joseph J. Duerksen is now a member of its staff and will devote his time to general practice. Dr. Duerksen is a graduate of the University of Kansas School of Medicine.

Dr. William R. Lentz, a 1953 graduate of the University of Kansas School of Medicine, is now practicing in Seneca in association with Dr. Conrad M. Barnes. Dr. Lentz served his internship at Menorah Hospital, Kansas City, Missouri, and then practiced for a year in Hickman Mills, Missouri. During his student days he spent his preceptorship with Dr. Barnes in Seneca.

Dr. Farris D. Evans, Wichita, was named surgeon general of the Veterans of Foreign Wars at the national encampment of the organization held in Boston last month.

Dr. George Malouf, formerly of Greensburg and Leoti, has moved to Macksville and has taken over the practice of Dr. William A. Nixon, who is taking postgraduate work at the University of Pennsylvania.

Dr. Charles F. Haughey has closed his office in Tribune to accept a position with the Student Health Center at Kansas State College, Manhattan. The practice in Tribune is being cared for by Dr. Willard F. Werner.

Dr. M. M. Tinterow, Wichita, was named secretary of the Sedgwick County Society recently to fill the unexpired term of Dr. Charles P. McCoy, who has enrolled for a two-year residency in obstetrics in St. Louis.

Dr. R. D. Grayson, Overland Park, who has delivered more than 3,500 babies during his 33 years of practice in Johnson County, was guest of honor at a community party on September 24 marking his 65th birthday anniversary.

The Topeka Medical Center announces the addition of two new members to its staff, Dr. Charles F. Pierce, who recently completed a residency in obstetrics and gynecology at Charity Hospital in New Orleans, and Dr. Lawrence M. Agan, who formerly was head of the department of radiology at Lowell General Hospital, Lowell, Massachusetts. Dr. Pierce is a graduate of the University of Pennsylvania School of Medicine and Dr. Agan of the University of Vermont School of Medicine.

Dr. Victor G. Henry, who was stationed at Fort Leavenworth during two years of service in the Army, was released from duty last month and has returned to his practice at the Axtell Clinic, Newton.

Dr. Donald P. Trees, Wichita, disaster chairman of the Sedgwick County Society, received a certificate of honor from the American Red Cross for the society's work in the recent Udall tornado emergency.

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DEATH NOTICES

JAMES ARTHUR McLAUGHLIN, M.D.

Dr. J. A. McLaughlin, 85, an honorary member of the Sedgwick County Medical Society, died at Wichita on August 19. He had practiced more than 50 years after his graduation from Barnes Medical College in St. Louis in 1899. His first office was in Argonia. He later practiced in Norwich and in Wichita, and in 1913 he moved to Greensburg and remained there until his retirement. In 1949 he was honored by friends in Kiowa County with a celebration at Greensburg marking his 50 years of service. During World War I he served in the Army.

JAMES DENNISON COLT, SR.

A physician who served as president of the Kansas Medical Society in 1933, Dr. James D. Colt, Sr., 88, died in Manhattan on August 31. He was an honorary member of the Riley County Medical Society, which he helped organize.

Born in Tennessee, Dr. Colt came to Kansas in 1887 to open a drug store in Riley. He later entered the University Medical College of Kansas City and received his degree in 1900. He began practice in Manhattan in 1901 and retired in 1945. His son, Dr. James D. Colt, Jr., and his grandson, Dr. James D. Colt, V, continue the practice.

FREDERIC E. NIPPLE, M.D.

Dr. F. E. Nipple, 80, who had practiced in northeastern Crawford County for almost 50 years, died at a Pittsburg hospital on September 1. He had been in poor health for two years.

Dr. Nipple received his education at the University Medical College in Kansas City, graduating in 1906, and immediately afterward opened an office in Mulberry. He continued to practice there until he entered the hospital in May.

DELOS MEEKER STEVENS, M.D.

Dr. D. M. Stevens, 65, died at a Lawrence hospital on September 2 after an illness of two weeks. He was a native of Oskaloosa and had practiced there for 43 years, since his graduation from Kansas Medical College, Topeka, in 1912. He was an active member of the Jefferson County Medical Society.

JOHN MCGILL PORTER, M.D.

Dr. John M. Porter, 56, died at a Concordia hospital on September 5, exactly four months after he had taken office as president of the Kan-

sas Medical Society. He had been active in his practice of internal medicine in Concordia and in serving the Society until two days before his death.

Dr. Porter was graduated from Harvard Medical School in 1926, served an internship at Henry Ford Hospital in Detroit, and began practice in Concordia in 1928. In 1938 and 1939 he did post-graduate work at the University of London and the London Heart Hospital.

In addition to serving the Cloud County Medical Society in many capacities, including that of president, Dr. Porter served the state organization in all of its offices. For eight years he was secretary of the Society. He then served a five-year term as one of the Kansas delegates to meetings of the A.M.A. and was successively elected second vice-president, first vice-president, and president-elect.

He had also served as president of the Golden Belt Medical Society and had held the same office in the Kansas Heart Association. During a four-year period he was a member of the Kansas State Board of Health.

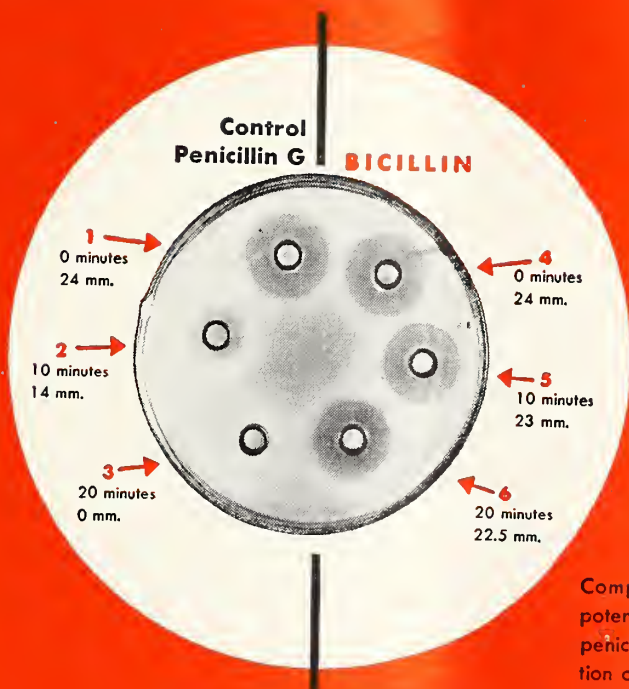
During World War I Dr. Porter was a second lieutenant in the field artillery. As a Navy physician he was on active duty for four years during World War II, receiving his discharge as a captain.

WILLIAM OSEE POSTON, M.D.

Dr. W. O. Poston, 70, who had practiced in the Quenemo community for 42 years, died at a Topeka hospital on September 15. He was an honorary member of the Osage County Medical Society. A native of Indiana, he was graduated from the Indiana University School of Medicine in 1908 and came to Kansas the following year. He practiced for a short time in Garden City before moving to Quenemo.

FREDERICK DONALD SMITH, M.D.

Dr. F. D. Smith, 57, a member of the Sedgwick County Society, died at a Wichita hospital on September 13 after a long illness. He received his education at Notre Dame University and Northwestern University Medical School, winning his degree from the latter in 1922. He practiced first in Chicago and later came to Kansas to open an office in Belleville. In 1933 he moved to Wichita and engaged in general practice there and in Valley Center. He was active in boys' work and served as a director of Sunflower Boys' State.



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1. American Medical Association: New and Nonofficial Remedies. J. B. Lippincott Co., Philadelphia, 1954, p. 147.



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THE MONTH IN WASHINGTON

Editor's Note. The following summary of Washington news was prepared by the Washington office of the A.M.A. for distribution to state and regional medical journals.

Although Salk vaccine now is coming from the laboratories in encouraging volume, in Washington there still are unresolved questions that may well go beyond the problem of controlling poliomyelitis.

After months of wrangling, Congress this year enacted only one law dealing with the new vaccine. This was an authorization for the allocation of money to states to help finance inoculation campaigns. On this there was a sharp difference of opinion. Some lawmakers wanted to give federal money but to earmark it for the exclusive use of children who had passed the "means test," that is, whose parents had been officially determined to be unable to pay for the shots. Others would have nothing to do with a bill carrying the "means test."

As finally enacted, the law provides enough money to buy vaccine for only approximately one-third of all children under 20 and pregnant women. That is a concession to those who want a "means test." But the "no-means test" faction was appeased by another

provision of the law, a stipulation that in inoculation programs arranged by the state and communities no financial questions could be asked.

It may be that this decision will be final, that Congress will have nothing more to do with this complicated problem, except possibly to add to the 30 million dollars already appropriated to pay for vaccine. But that isn't the way some members of Congress feel. They want to reopen the entire question before the present law expires next February 15. At the very least, these senators and representatives want Congress to vote enough money to buy shots for all children in the eligible ages. In fact, those who want the federal government to play a larger role in inoculation programs regard the law now on the books as merely a temporary measure. They are looking forward to reopening the issue.

If this is done, the many questions that the last session couldn't decide again will be before Congress. Here are some of them:

1. Is it the responsibility of the federal government to make free shots available to all, regardless of ability to pay?

2. If there is to be a "means test," should the states or the federal government set the dividing line between the families that can pay and those that can't?

3. Should the federal government move into the picture and allocate the available vaccine, or should distribution continue along the present voluntary lines?

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4. Should the states and communities arrange for all inoculations themselves?

Underlying these questions are some issues that go beyond Salk vaccine. Some persons in Congress believe there should be no limit to the participation of the federal government in public health programs. They would like to see free inoculations not only for poliomyelitis but also for all other communicable diseases for which there is a specific vaccine.

Also, the rambling system of federal control over drugs, with enforcement spread among half a dozen departments and agencies, is under criticism. Some leaders in Congress believe the whole area of federal drug control should be surveyed and possibly more clear-cut lines of enforcement laid down. One bill on this subject—which was not pressed last session—would give the Secretary of the Department of Health, Education, and Welfare authority to move in and assume control over the distribution and even the use of any drug when the Secretary decided that the public welfare warranted such drastic action.

NOTES

During the current fiscal year the U. S. will be spending a total of over 32 million dollars to help in vocational rehabilitation work, most of it in the form of grants to states.

In exchange for patent rights, colleges and laboratories will receive some financial concessions from

the Atomic Energy Commission in purchase of nuclear materials and equipment.

From now on Air Force physicians, when addressed verbally, will be called "doctor." The military rank and title will continue to be used, however, in written communications.

The Department of HEW's many medical research programs are being scrutinized by a special committee set up by the National Science Foundation. In originally suggesting the study, former HEW Secretary Hobby said the time had come to re-evaluate the extent of federal medical research. Final findings will be turned over to HEW Secretary Marion B. Folsom.

JONES SCHOLARSHIP FUND

A scholarship fund honoring the late Dr. Harold H. Jones, Winfield, has been set up under the auspices of the Kansas Chapter, American College of Physicians. Contributions may be sent to either of two banks in Winfield, addressed to the attention of Mr. John Jarvis, First National Bank, or Mr. Cecil Coffey, State Bank.

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The Etiology of Diabetic Neuropathy

George E. Langsjoen, M.D.

^{*} Seattle, Washington

INTRODUCTION

The purpose of this paper is to review the literature on the etiology of diabetic neuropathy. This subject is controversial and several theories exist, some better accepted than others. No attempt will be made to review the symptomatology, physical findings, pathology, or treatment, about which there is much less controversy, and those subjects are well described in medical journals.

HISTORY

The first mention of the involvement of the nervous system in diabetes mellitus appears in John Rollo's book, *Cases of Diabetes Mellitus* (1798), in which the author notes the presence in diabetic patients of pains and paresthesias, especially in the lower extremities, as "lumbago" and "sciatica" in such a degree as to limit the use of the lower extremity.

Before 1850, the frequency of these neurological abnormalities in diabetic patients led writers to believe this disease was one of the nervous system itself. Marchal de Calvin in 1864 first recognized that diabetes might be the cause, rather than the result, of nervous disturbances.

Auche (1890) reviewed the known facts about the relationship between nervous disorders and diabetic neuropathy and observed that these did not correlate with the blood or urine sugar.

Between 1880 and 1900, the majority of the neurological complications of diabetes mellitus were clearly described.¹

CLASSIFICATION

There have been attempts at classifying the types of diabetic neuropathies in respect to their characteristics and etiology. These will be considered since they take into consideration the possible role of general etiological factors. They also will aid in defining what we are actually concerned with in this paper.

Gregory and Lindley (1947)² mention Leyden's old classification into (1) hyperesthetic or neuralgic, (2) motor or paralytic, (3) ataxic or pseudotabetic forms with peripheral sensory deficiencies, absent tendon reflexes and absent pupillary reflexes. This classification lends little to our problem.

Jordon (1936)³ proposed four types of diabetic neuropathy: (1) The hyperglycemic type which includes cases in which tenderness of nerves and muscles is the only symptom. These cases supposedly respond promptly to adequate diabetic management. (2) The circulatory type in which, besides impaired circulation, there is found to be pain, paresthesia, hyperesthesia, and hyporeflexia. (3) The degenerative type characterized by rather mild neuritic symptoms which begin insidiously and progress slowly over a period of years. (4) The neuritic group in which the onset is rather acute and improvement follows slowly with adequate diabetic management. Jordon himself believes that his groups 2 and 3 probably are identical.

Wilder⁴ accepts only two real categories, the hyperglycemic and the neuritic, and believes that the circulatory and degenerative types belong to the neuritic group.

Treusch (1945)⁵ brings out the point that "diabetic neuritis" is, in many cases, a misnomer. In many cases in which the condition is called "diabetic neuritis," the main etiological factor is not diabetes per se; in other cases the condition is not truly neuritis. Since some clinicians consider pain alone adequate for the diagnosis of diabetic neuropathy, there has been a tendency for many essentially different processes to be referred to loosely by the term "diabetic neuritis." Because of this, he feels it is necessary to have classifications of diabetic neuropathy. He groups patients with "diabetic neuropathy" into three groups: (1) diabetics with pain, (2) diabetics with ischemic neuropathy, and (3) those with diabetic polyneuritis.

The first group includes diabetics with pain, especially in the lower extremities but also in the arms and back. This pain is worse at night. No physical signs are found other than slight tenderness. The diabetes is always out of control and responds promptly to diabetic management.

In group two, ischemic neuropathy, vascular sclerosis with arterial insufficiency of some degree is almost always present. The onset is insidious. Men are affected more frequently than women. Pains, cramps, and paresthesia, occurring especially at night, constitute the main symptoms. The principal finding is a decrease in the peripheral reflexes. Involvement is primarily of the lower extremities. In this group the disease tends to be progressive but may improve slightly if the vascular status can be improved.

Group three is true diabetic polyneuritis. There is

This is one of 11 theses, written by fourth year students at the University of Kansas School of Medicine, selected for publication by the Editorial Board from a group judged to be the best by the faculty at the school. Dr. Langsjoen is now intern at King County Hospital, Seattle, Washington.

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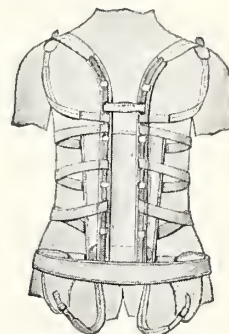
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usually an acute onset. It may occur in the young as well as the old diabetic. It may involve any part of the nervous system, but most often the lower extremities are involved. There are definite neurological symptoms and physical findings. The author states, "Here are included peripheral polyneuritis and polyradiculitis, with its secondary changes in the spinal cord. The clinical picture may be that of neuronitis and suggests the Guillain-Barre syndrome. Whereas diabetic pseudotabes presents a more or less unique clinical syndrome, it may be dependent on changes in the peripheral nerves and roots; hence its inclusion in this group may be justified."

The author adds to these a fourth group called "diabetic visceral neuritis." He refers to the peripheral vasomotor fibers of the autonomic nervous system. He adds this group mainly to emphasize that it is frequently overlooked. I believe this could be included with group three.

In the following discussion of the etiology of diabetic neuropathy, the groups Treusch called "diabetic polyneuritis" and "diabetic visceral neuritis" are those with which we will be concerned.

ETIOLOGY

Three theories have been considered at greater length than others, and these will be considered first. These three are: (1) vascular, (2) vitamin deficiency, and (3) metabolic.

I. Vascular

Arteriosclerotic vascular disease has already been mentioned in Treusch's second group. However, investigation of the role arteriosclerosis plays in true diabetic neuropathy has also been carried out. Diabetics are well known to be much more prone to develop arteriosclerosis than non-diabetics, and they do so much earlier in life.

Martin¹ quotes Cecil (1940) and Hines (1941) as stating that arteriosclerosis is invariably present in diabetics past the third decade of life. This led to the early suggestion that this is an important factor in the true etiology.

Woltmann and Wilder¹ (1929) studied histological sections of involved nerves and their accompanying nutrient vessels and concluded that decreased nutrition to involved nerve was a likely cause of diabetic neuropathy.

Needles and Williams⁶ (1939) state that vascular changes in nutrient arteries to peripheral nerves may be responsible for diabetic neuropathy in at least some cases. They further state that in diabetics peripheral vessels and cardiac vessels are affected in 37 to 46 per cent respectively, and the brain in 2 per cent. In non-diabetics, they found cerebral and renal vessels to be involved more frequently, and they concluded the site of predilection for vascular changes is different in diabetics and non-diabetics. They could

give no reason for this. They suggested a further study of nutrient vessels of peripheral nerves of diabetics and patients with generalized arteriosclerosis to ascertain the difference in quality as well as the extensiveness of lesions.

Root⁷ (1946) states that the universal reversal of diabetic neuropathy in young patients makes impossible the belief that the lesion depends upon permanent degenerative changes characteristic of occlusive vascular disease.

The problem is not whether arteriosclerosis is present, but whether it is important in the production of neuritic symptoms. Martin¹ (1953) used two methods to test the state of circulation in the lower extremities: (1) skin temperatures after intravenous injections of 50 mg. of Priscoline and (2) oscillometric readings of the pulsations in the calves. These tests were carried out on 20 patients with vascular disease and diabetic neuropathy and in four patients with diabetic neuropathy without vascular disease.

Martin summarized these tests by stating that "The results of these tests do not suggest that vascular disease is of importance in the etiology of diabetic neuropathy. The latter occurs with a good circulation and is frequently absent in cases with the most severe ischemia. The sudden development of the nervous disorder, and in many cases its rapid response to adequate control of the diabetes, are additional factors against an ischemic etiology."

Karnosh (1949), unable to explain the entire picture of diabetic neuropathy on an arteriosclerotic basis, suggested that the neuropathy of young diabetics be separated from that of the elderly and thought ischemia was responsible only in older patients.

It was apparent from the literature that there have not been sufficient studies of pathological specimens to draw any conclusions in regard to arteriosclerosis being the etiological factor. It would seem that pathological studies made after death of diabetics would certainly show increasingly higher degree of arteriosclerosis of nutrient vessels since diabetics are living longer life spans than before insulin management. Beneficial studies might be possible in young diabetics with the picture of diabetic neuropathy.

II. Vitamin Deficiency

This leads the group of various theories in the amount of research and support given. Some authors have even maintained that this explains the entire picture.

Much of the work concerning the role of vitamin deficiency speaks mainly for the relationship between polyneuropathy and the deficiency and not necessarily between vitamin deficiency and diabetic neuropathy. Nevertheless, this was the early approach in research concerning the etiology of diabetic neuropathy.

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1. Eisenberg, et al., *Antib. & Chemo.*, 3:1026-1028, Oct., 1953.



caused by diabetes mellitus and alcohol was remarked upon by several of the earlier writers (Auerbach, 1887; Von Leyden, 1887; Buzzard, 1890; Charcot, 1890), and in 1922 Harris suggested that they might have a common etiology. Subsequently cases were reported of diabetic patients with clear-cut deficiency syndromes and in 1926, Wohl, after investigating the nutritional state of a number of diabetics with neuritic symptoms, expressed the opinion that vitamin deficiency was the cause of the nervous disorder."¹

Cob and Coggeshall⁸ stated in 1934 that the etiology was rapidly coming to light. They believed diabetic neuropathy might be due to a dietary restriction imposed upon the patient, thus causing a vitamin deficiency.

Needles,⁶ in 1939, studied three cases of diabetic neuropathy from the standpoint of a calculated vitamin-calorie ratio. In all cases, thiamine was found to be adequate. They do suggest that even though the diet is adequate in thiamine, the factors of absorption or utilization of the absorbed vitamin cannot be ignored.

Jolliffe et al.⁹ (1940) found nine cases of diabetic neuropathy in 422 diabetics who had characteristics of peripheral neuropathy in proved thiamine deficiency. Treatment with 10 mgs. of thiamine daily without other changes in the regimen resulted in complete cure of eight patients and improvement in the ninth. Indifferent results were obtained in diabetic patients who had only vague aches and pains of lower extremities. Their conclusion was that thiamine was the etiological factor.

Meikeljohn¹⁰ (1940), after a study of unnumbered cases, concluded thiamine definitely was not the answer, but could be, along with a total nutritional deficiency, especially carbohydrates. He was against thiamine as the sole etiological factor.

Swank¹¹ (1941) fed young pigeons highly purified thiamine-free diets in amounts sufficient to prevent large weight loss and found it invariably led to opisthotonus. Less deficient diets led to ataxia, leg weakness, and cardiac failure. His conclusion and contribution to the problem was that severe or total deprivation leads to death without pathological findings when a chronic subtotal deprivation led to pathological findings of a nerve degeneration.

Street¹² (1940) in his experiments with dogs confirmed Swank's conclusion. He fed dogs subtotal thiamine deprivation diets. His conclusion: inanition, accompanied by chronic thiamine deficiency can, at most, account for only a small share of the myeline degeneration observed.

Williams¹³ (1943) was apparently the first to experiment with human volunteers. He fed two persons a 2,000 calorie diet with a daily thiamine content of 0.2 mg. per day with a test dose of 1 mg. every two

weeks, raising the daily dose to 0.35 mgs. per day. First sign at the end of 30 days was a decrease in urinary excretion of thiamine. After 50 days, a test dose of 1 mg. was followed by a decrease in urinary excretion of thiamine. After this time, whenever dextrose was given, abnormally high blood pyruvic and lactic acid were encountered.

At about this same time, complaints of paresthesia and asthenia were encountered. After 110 days, polyneuropathy was apparent in both patients. Eighteen controls on the same calorie diet with thiamine furnished were observed and had no symptoms. Most of these patients responded to thiamine in several weeks and one in four months. His conclusion was that the diet must be partially deprived of thiamine to show the characteristics and pathology of neuropathy.

Stare¹⁴ (1943) cites previous work by various men who have found other members of the vitamin B complex to cause peripheral neuropathy. Engle in 1938 incriminated riboflavin and, somewhat later, pantothenic acid. Wintrobe, in 1942, under experimental conditions, found calcium pantothenate and pyridoxine to prevent sensory neurone degeneration in growing pigs.

Rudy¹⁵ (1945) brings up the important factor that diabetic neuropathy doesn't respond to thiamine as does thiamine deficiency neuropathy itself. He further states that diabetic neuropathy can be precipitated by complications of diabetes or by control of diabetes, whether by diet or insulin. He says there is no relationship between the duration or severity of diabetes and the resulting neuropathy, thereby contradicting the supposition that the above findings of Street, Swank, and Williams add much to the picture.

Rundles¹⁶ (1945) states that neither occlusive vascular disease nor primary or conditional vitamin B₁ deficiency plays a definite etiological role in diabetic neuropathy.

Root⁷ (1946) mentions three reasons why thiamine deficiency is often linked with diabetic neuropathy: (1) the relationship of carbohydrate metabolism to thiamine, which functions as co-enzyme in many important metabolic reactions; (2) similarity of the clinical picture of diabetic neuropathy and thiamine deficiency neuropathy, and (3) a disproportion between carbohydrate and protein calorie intake and thiamine intake as well as increased loss of thiamine in the accompanying polyuria in uncontrolled diabetics.

Root, in studying cerebrospinal fluid findings, believes the lesion in diabetic neuropathy is found chiefly in the central nervous system, whereas it is found peripherally in thiamine deficiency neuropathy. He adds that diabetic neuropathy may occur in spite of adequate thiamine intake.

He concludes by stating that the role of thiamine

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deficiency is difficult to assess without accurate measurement of carbohydrate oxidation and vitamin balance. He believed that if thiamine deficiency was important in diabetic neuropathy, it was really dependent upon the metabolic disturbance of uncontrolled diabetes.

In an editorial in *Lancet*,¹⁷ the author concluded that in 1947 the answer was not yet known and that if vitamin B₁ is connected with diabetic neuropathy, it must be in relation to some *subtle* upset of carbohydrate metabolism.

Marble¹⁸ (1948) only emphasizes the work of previous research in regard to the role of thiamine deficiency and diabetic neuropathy. He does emphasize, however, the factors of decreased absorption, increased utilization, increased requirement, and the increased excretion of vitamin B₁. He concluded by stating that speculation is the only possibility, at present. All his conclusions were based upon personal experience with diabetic neuropathy.

III. Metabolic

Many authors of recent literature conclude that the true answer to our problem lies in the faulty metabolism found in diabetes mellitus. Explanation beyond this is not extensive.

Martin states that the development of diabetic neuropathy often prolonged periods of diabetic neglect, as well as the establishment of diabetic control by the use of insulin, which suggests that the neuropathy is not only truly diabetic and intimately related to the disturbance of carbohydrate metabolism, but may, in some cases, be related to the rapidity or extent of alterations in carbohydrate metabolism and its associated changes.

DeJong¹⁹ (1950) concludes that a failure on the part of the patient to utilize carbohydrates in amounts adequate to satisfy his metabolic requirement is followed by oxidation of fats and proteins to meet the necessary energy requirements. He believes that excessive lipid oxidation may lead to peripheral nerve demyelination. He provides no statistics but adds that the cerebroside, phospholipid, and cholesterol content of the involved nerves in diabetic neuropathy is much lower than that of nerves used as controls.

Martin emphasizes that although diabetic neuropathy may occur in young diabetics and those with a short history of the disease, and in well controlled diabetics, it most often occurs in chronic uncontrolled diabetics. However, he found in 112 cases that none had presented any acute complications of diabetes mellitus. In reviewing both the literature and records at King's College Hospital, he found no evidence to indicate that patients who frequently had to be admitted for acute diabetic complications of short duration were any more likely to develop neuropathy, although rapidly metabolic decompensation was pres-

ent in six cases; neither ketosis nor coma appeared to be directly related to the etiology of diabetic neuropathy.

Mowry²⁰ (1951), in a survey of patients treated at the University of Kansas Medical Center over several years, found that 58 per cent occurred in diabetics who had marked weight loss before symptoms of diabetic neuropathy arose.

Rundles also stated that there is a striking correlation between diabetic neglect, of a degree permitting the patient to survive in a debilitating state of health without succumbing to acute complications, and the ultimate development of diabetic neuropathy. He states that there is no correlation between the severity of diabetes or any one acute complication of diabetes such as coma, acidosis, or ketonuria, and the incidence of diabetic neuropathy. He brings out the point that carbohydrate is the principal food stuff in the metabolism of nerve tissue and since the defect is an inability to oxidize carbohydrate, this may be a big point.

That ketone bodies themselves are toxic and may precipitate diabetic neuropathy has also been considered. The ketone bodies are not abnormal metabolic products and are not considered toxic or harmful to nervous or other tissues.

Rundles attempts to draw the following analogy between thiamine deficiency, which is a better known cause of peripheral neuropathy, and diabetic neuropathy. Thiamine deficiency produces a "biochemical lesion" in carbohydrate metabolism wherein there is a failure of pyruvic oxidation, with accumulation of this substance and lactic acid in the tissues. He concludes that if abnormal carbohydrate metabolism proves to be a common denominator in different types of peripheral neuropathy, it is likely unimportant with regard to the end result if the defect occurs at the 6 carbon stage, as in diabetes mellitus, or at the 3 carbon stage, as in thiamine deficiency.

Marble¹⁸ and Root⁷ too maintain that if thiamine is important in diabetic neuropathy, it is really dependent upon the metabolic disturbance of uncontrolled diabetes.

The apparent precipitation of diabetic neuropathy by initiation of diabetic management has never been adequately explained. However, persistence of diabetic control eventually leads to recovery.

Emerson²¹ (1948) states that three B vitamins are as necessary as insulin itself for glucose oxidation. The patient's vitamin requirement varies directly with his insulin intake. If one increases the insulin intake, one also increases the vitamin requirement, secondary to greater glucose oxidation. This he gives as the explanation for insulin management precipitating diabetic neuropathy.

Levitt²² (1954) believes that diabetic neuropathy may be precipitated by diabetic control when it in-



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volves marked shifts in water and electrolyte balance leading to excessive urinary losses of water soluble vitamins and temporary changes in intracellular metabolism.

Epstein²³ (1952) divides patients with diabetic neuropathy into two groups: (1) those with arteriosclerotic vascular disease who consequently have a poor prognosis and (2) those without arteriosclerotic vascular disease who have a good prognosis. These patients have experienced prolonged poor diabetic regulation. Epstein believes that prolonged poor regulation plays a role in the precipitation or aggravation of diabetic neuropathy in either type.

Levitt more or less summarizes his viewpoint by stating that one is left with the vague concept that the abnormal metabolic state found in poorly regulated diabetic patients exerts a "toxic" effect upon the nerve tissue.

IV. Miscellaneous Groups

There have been other proposed causes for diabetic neuropathy which have had very little support, and the literature only mentions them. Some of these are: (1) unknown toxic substances due to the diabetic condition, (2) acetonuria which has been mentioned, (3) tocopherals, (4) dehydration (of course one of the main pathological features of diabetes mellitus is cellular dehydration), (5) cachexia, and (6) hypercholesteremia.

DISCUSSION

It is evident that the first etiological factor mentioned, arteriosclerosis, cannot account for the picture of diabetic neuropathy in all patients. If diabetic neuropathy was limited to the older age group, this would be an important factor. The proposal of Karnosh, to separate the diabetic neuropathy of young from that of older diabetics, doesn't seem feasible since the clinical picture is not different in the two age groups. One might state safely that arteriosclerotic changes in nutrient arteries may play an aggravating role in older diabetics and in those refractory to diabetic management. More pathological studies would be helpful.

In consideration of vitamin deficiency, it was seen that there are completely opposing viewpoints. Some writers maintained that they obtained complete cures; others found no relief with thiamine administration. The question arises as to whether or not the latter were dealing with true diabetic neuropathies. If dietary intake, absorption, utilization, and excretion factors could be accurately determined, this faction would achieve more significance.

In view of: (1) the opposing opinions regarding this factor, (2) the knowledge that dietary thiamine content has been found to be adequate, (3) the paucity of writers who claim thiamine relieves the symptoms of diabetic neuropathy, and (4) regression

of symptoms following diabetic management alone, one might consider thiamine deficiency as being a not too significant factor. The suggestion that it is intimately related to abnormal carbohydrate metabolism leaves much to be desired in so far as clarity is concerned.

It is generally agreed that diabetic neuropathy usually occurs after prolonged periods of diabetic neglect. DeJong's interesting theory that excessive oxidation of fats leads to demyelization of peripheral nerves bears further investigation. At least this is a theory which gives a more clear picture than just stating that diabetic neuropathy is due to some vague upset in carbohydrate metabolism. No conclusion was reached concerning Rundle's idea that inability to oxidize carbohydrate, which is the principal food-stuff of nerves, was a possible etiological factor.

Hyperglycemia and toxic effect of ketone bodies have been ruled out.

Levitt's hypothesis concerning diabetic neuropathy being precipitated by diabetic management appears the most attractive. However, in these cases, it would be necessary to obtain relief of symptoms by thiamine administration, which is not always possible.

CONCLUSION

1. At present, the etiology of diabetic neuropathy has not been determined.
2. It is the opinion of most writers that diabetic neuropathy occurs after prolonged periods of diabetic neglect.
3. The etiology most likely lies in some vague abnormality of carbohydrate metabolism.
4. The best treatment would seem to be prevention of occurrence of diabetic neuropathy and, after it has occurred, prompt and adequate diabetic control—both in form of insulin and in dietary and vitamin management.

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COUNTY SOCIETIES

A meeting of the Wyandotte County Society was held at the City-County Health Building, Kansas City, on September 20. Dr. Earl C. Sifers presented a paper on "Carcinoma of the Thyroid." Eight applications for membership were received.

The Sedgwick County Society opened its fall season with a tourney on September 30 at Rolling Hills Country Club and the Wichita Gun Club. The day was concluded with a dinner at the golf club and the awarding of prizes.

An attorney, Mr. L. M. Cornish, Jr., addressed the Shawnee County Society at a meeting held at the Medical Society Building, Topeka, on September 6. He spoke on services of interest to the physician, such as Kansas Children's Home and Service League, legal aid, vocational services, facilities for outpatient psychiatric and psychological counseling, alcoholism, etc.

ANNOUNCEMENTS

The 23rd annual assembly of the Omaha Mid-West Clinical Society will be held at Hotel Paxton, Omaha, October 24-27. The program will feature 11 nationally known guest speakers, 36 lectures by members of the faculty of the University of Nebraska College of Medicine and Creighton University School of Medicine, four panel discussions, informal discussions following luncheons and dinners, scientific motion pictures and exhibits, and technical exhibits.

A registration fee of \$7.50 will be charged. The assembly has been approved for credit by the Amer-

ican Academy of General Practice for 37 hours of postgraduate instruction.

Information may be secured from James J. O'Neil, M.D., Director of Clinics, 1031 Medical Arts Building, Omaha.

The Oklahoma Division of the American Cancer Society will present its third annual scientific session at the Huckins Hotel, Oklahoma City, on December 2. Guest speakers known throughout the nation will present the program, concerned entirely with cancer. Information may be secured from the Oklahoma Division, 937 Commerce Exchange Building, Oklahoma City 2, Oklahoma.

The trustees of the Caleb Fiske Fund of the Rhode Island Medical Society are offering a cash prize of \$350 for the best essay submitted on "Use of Radio-active Isotopes in the Treatment and Investigation of Disease." The manuscripts must be typewritten, double spaced, and should not exceed 10,000 words. Deadline for entries is February 2, 1956. Information may be secured from John E. Farrell, Sc.D., 106 Francis Street, Providence 3, Rhode Island.

The next scheduled examination (Part I), written examination and review of case histories, for candidates for certification by the American Board of Obstetrics and Gynecology will be held in various cities on Friday, February 3, 1956. Current bulletins may be obtained from Dr. Robert L. Faulkner, 2105 Adelbert Road, Cleveland 6, Ohio.

The American Regents of the International Board of Proctology announce plans for international certification of two classes of applicants: (1) those desiring certification for the practice of proctology, either anorectal or anorectal and coloproctology, and (2) those seeking certification for proctology within general surgery. Those in the first category must practice proctology only. In the second group are general surgeons whose activities are partially limited to proctology. For the present there will be no certification of candidates in the United States.

Applications may be secured from the American Regents, 147-41 Sanford Avenue, Flushing, New York.

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BOOK REVIEWS

Feeling No Pain. By Bill O'Malley. Published by Prentice-Hall, Inc., New York City. 88 cartoons. Price \$1.95.

Bill O'Malley's ability to find a laugh in almost any form of human activity is turned toward the hospital in his latest book of cartoons, *Feeling No Pain*, published last month. The same humor which typified a former product of his drawing board, *Blessed Event*, is apparent.

Although the patient is the subject in most of the cartoons, the physician will find himself or his colleagues in some of the good humored drawings. And he'll probably come forth with chuckles as he turns the pages.

Fluoroscopy in Diagnostic Roentgenology. By Otto Deutschberger, M.D. Published by W. B. Saunders Company, Philadelphia. 771 pages, 888 illustrations, 523 figures. Price \$22.

This work seems to be, as is stated in the preface, the first attempt to compile all essential knowledge about fluoroscopy in a single volume. The author has attained a considerable degree of success and deserves thanks and congratulations for the fine organization and excellent presentation of his material.

The potentials and limitations of this diagnostic procedure are well treated. There is a concise discussion of protection against radiation hazards, technical factors, and the image intensifier in the first section. The second or clinical section is divided according to anatomical regions into the head, neck, chest, abdomen, and extremities. An appendix contains forms for reporting fluoroscopy, which also may serve as an excellent check list for the trainee or occasional fluoroscopist.

Numerous illustrations represent a valuable addition to the text. The part on the segments of the lung could well have been amplified. The correlation of radiographic techniques is indicated, and many roentgenograms are included. The format and illustrations are of the usual Saunders excellent quality.—K.Y.

MEETING OF PEDIATRICIANS

Pediatricians of Kansas met at Emporia on September 10 for a scientific program and business session. Dr. David R. Davis, Emporia, was elected to preside over the Kansas State Pediatric Society during the coming year, with Dr. Charles T. Hinshaw, Wichita, as vice-president and Dr. Theodore E. Young, Winfield, as secretary-treasurer.

Ciba Pharmaceutical Products will soon publish the first issue of an eight-page tabloid-sized newspaper carrying reports on medical developments, activities of professional and scientific organizations, hospitals, research institutions, medical colleges and federal agencies. The publication will be distributed to physicians exclusively and will be issued every other week.

SCIENCE CONTRACT AWARDS

Award of 175 unclassified life science research contracts in the fields of biology, medicine, biophysics, and radiation instrumentation was announced last month by the Atomic Energy Commission. Kansas institutions were awarded four contracts.

The University of Kansas School of Medicine, with Dr. Robert E. Stowell as investigator, will study effects of ischemia, irradiation, and chemical irritation on cytochemistry of mammalian tissues. The University of Kansas will center its work on deposition and excretion of bone-seeking radioisotopes, with Dr. Frank E. Hoecker as investigator.

Two workers at Kansas State College, Dr. C. C. Roan and Dr. R. E. Clegg, will supervise separate projects. Dr. Roan will study use of radioactive tracers in investigations of the mode of action of insecticides with emphasis on potential systematic or chemotherapeutic action. Dr. Clegg's work will center around phosphoproteins of the embryonated egg.

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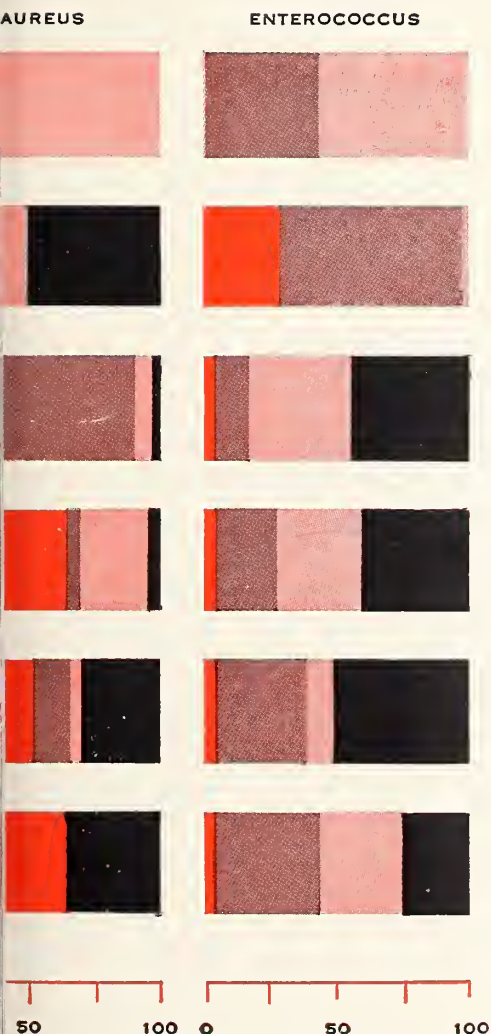
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THE JOURNAL *of the* KANSAS MEDICAL SOCIETY

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Volume LVI

NOVEMBER, 1955

No. 11

Care of the Terminal Cancer Patient

J. Herbert Nagler, M.D.

Philadelphia, Pennsylvania

The search for a cure for malignancy occupies an important place in the public mind and may be successful in the near future. At a symposium such as this, some day soon, possibly the answer will be announced. Then let us hope such a topic as mine this morning will be unnecessary. Meanwhile, however, patients are suffering with and are dying of malignant disease and require good medical attention now. Basically this is a problem for the general practitioner, because these patients are usually longest under his care.

Last week I saw the latest play by Tennessee Williams, "Cat On a Hot Tin Roof." In it Burl Ives, the noted ballad singer, portrays a wealthy Mississippi planter who has had an abdominal operation at the Ochsner Clinic. It is reported to Ives and his family that the tissue is non-malignant and that his condition is merely a spastic colon. Then the family doctor breaks the news to the household that the tissue is actually cancerous, and at an inoperable stage. It is not important that immediately the family begins to calculate on Ives' death, though this is one of the chief plots of the story. What is significant to us here is that as soon as he finishes the explanation, the family doctor takes out a syringe of morphine to give the patient "because he must be having lots of pain and hiding it."

Ladies and gentlemen, my purpose in coming to you this morning is to plead with you by any words at my disposal not to reach for the narcotic when inoperable cancer is diagnosed.

In this play Burl Ives was his own huge personable

self as much after the diagnosis was put into words as he was before. The saying that he had an inoperable cancer did not give him physical pain and did not make him need morphine. He needed medical care, yes, but not dope. No huge sums are required for research in this phase of the cancer problem. You or any other physician can readily apply it.

Patients afflicted with terminal or incurable cancer may be quite active and apparently healthy for months or even years. The diagnosis is not precise, but purely relative, implying only that these individuals have received the maximum benefit of surgery and irradiation, but giving no information on their anticipated years of survival. During the balance of their lives they must be cared for like anyone else, as they may suffer complications of their incurable disease that are not of themselves incurable. These complications may be painful or incapacitating, but they may be quite amenable to routine therapeutic measures.

In recent years a new combination of letters has entered medical terminology. TLC—tender loving care—is recommended for many types of patients. Nowhere in medicine, believe me, can TLC have such fruitful results as in care of terminal cancer victims. Properly applied TLC can inspire a person doomed to an early and painful death to live again, and happily. Many splendid scientific advances can be applied, but the will to apply them, accompanied by TLC, can work miracles. It is amazing that this condition, apparently 100 per cent organic, should have such a large psychic component.

Let me tell you about Norman A. This young man, about 30 years old, was admitted in December of

Presented at the Seventh Annual Mid-West Cancer Conference, Wichita, Kansas, March 25, 1955.

1953 from the Orthopedic Service of one of Philadelphia's fine medical schools. He had been diagnosed as having osteogenic sarcoma of the thigh with multiple metastases to the lungs. He was bedridden, and we were told he had a life expectancy of one or two months. He was receiving 6 to 12 doses of morphine or substitute daily and sedatives in addition. He had a stinking ulcer, about 5 by 10 centimeters, penetrating into the bone marrow, on the anterior surface of the right lower leg, just below the knee. The first slide* shows his chest x-ray on admission, the second his lower leg. On this evidence, plus his clinical record, you can readily accept the hopeless prognosis.

Treatment consisted of gentle irrigation of the cavity daily or every other day, then lining it with crystals of urea. Gradually the cavity filled in, and now, 15 months later, looks like this (third slide). Meantime he was weaned off narcotics rapidly, in about two weeks was out of bed in a chair, in six was standing, and now he looks like this (fourth slide). His chest x-ray looks like this (fifth slide), showing, as you will recall, no significant change. My biggest problem with him right now is that when I want to see him he is often downtown at the movies, and we are beginning to have considerable doubt about the diagnosis.

Care of these patients is probably hampered by the physician's resentment at being unable to effect a complete cure. Here, as almost nowhere else in medical work, the physician must aim for somewhat less than a perfect result and must learn to treat what he can.

Like any other type of medical problem, care of terminal cancer patients divides into diagnosis, treatment, management, and prognosis. None of the principles involved is earth-shaking or new; we must apply to these unhappy individuals rules all of us learned in medical school. But we should apply certain methods that many of us have been inclined to neglect just because of our own sense of futility. The medical literature is scanty, most articles in regular journals having been contributed largely by theologians and social workers, but the small bibliography available is quite satisfying, including a fine article in your state journal by Dr. Ralph Jordan of Holton, Kansas.

As in the handling of any other disease state, the first step is accurate diagnosis. This divides into two parts; confirmation of the diagnosis of malignancy and decision as to whether all other factors are or are not related to the basic disease. The first step should be undertaken by any physician entering the case for the first time, and must include tissue microscopy if at all possible. No other diagnostic method, no matter how obvious or certain, is acceptable, because clin-

ical, surgical, or radiological diagnosis may be incorrect. Particularly today, when so many of the granulomatous lesions are amenable to specific therapy, it is important that a pathologic diagnosis be absolutely insisted upon.

The second phase of diagnosis, as to whether intercurrent disease is related or unrelated to the underlying malignancy, is also fundamental. Frequently treatment by readily available measures may provide rapid and complete relief. Edema, which causes pain and interference with function, may be due to the disease process, but it may also be due to some circulatory pathology; pain may be caused primarily by the neoplasm or may result from secondary infection of the growth, but it may also be stimulated by any other intercurrent condition. When a precise diagnosis can be made, it is often possible to help the patient considerably with regard to many if not all of his complaints.

In general, it may be stated that pain directly due to a malignant process, except a pathological fracture, is of rather gradual onset and is fairly fixed in location. Pain caused by other conditions may be of sudden or gradual onset and may be more transient, depending, of course, on its cause.

Many of the patient's complaints may be due not to the tumor itself but to irritation or secondary infection of the tumor. Particularly in hollow organs, and most particularly in the gastrointestinal tract, the continual passage of contents may cause irritation and secondary infection that makes the tumor noticeably larger. Edema of extremities may mimic metastatic involvement of spinal nerves, fluid in chest or abdomen may act similarly to solid masses in the same areas, etc. These developments should be re-evaluated in each patient at rather frequent intervals.

Treatment is probably best begun by an intensive effort to eliminate narcotics if at all possible. This is imperative because in almost every case it will be found that either the physician, the nurse, the responsible family member, or the patient himself has been overdosing with oral or parenteral pain-killers. Narcotic addiction of itself causes anorexia, malaise, weakness, and not infrequently abdominal pain or cramps, and often these are incorrectly attributed to the malignant process. It may not be too apparent that the patient has become an addict, because he may obtain relief from one of several drugs, whereas the true addict usually prefers only one or two. Weaning him away from his addiction may be quite difficult, and again is hampered by the physician's own feeling of futility. "Why," he may ask himself, "deprive the patient this bit of relief?" The answer is that in practically every case the patient will feel better, not worse, after he is free of the narcotic.

The easiest way to reduce narcotic consumption is to give progressively smaller doses, at progressively

* The presentation of this paper included the showing of slides not available for reproduction here.

longer intervals, often by adding atropine, and finally by administering sterile water or an oral placebo. In a matter of only a week or two the patient is ready to be told that he need have no pain-killer—and this frequently gives a tremendous psychological boost.

A particularly pathetic aspect of the terminal cancer problem is the stinking ulcer or superficial lesion, characteristic in appearance and odor, regardless of the underlying pathology. This not only disturbs the patient himself but frequently antagonizes would-be visitors. Treatment begins by cleansing. For some years we have gently cleansed these areas with soap and water, then spread crystals of urea freely over the area. This material may occasionally be irritating to the surrounding skin, which though unbroken is rarely normal, and so vaseline or aluminum paste may be applied around the ulcer. It will be found that urea causes a liquefaction of the ulcer debris, and the loosened debris should be removed by washing with soap or detergent. We have not found any of the newer debris solvents, such as streptokinase and streptodornase, trypsin, etc., any better. After three to four weeks of such treatment the entire area should be painted with 5 to 10 per cent silver nitrate daily for about one week, then the urea crystals should be used again.

Secondary infection should be treated by appropriate antibiotics. Patient application of this method for several months of steady though slow progress may see a huge, indescribably ugly ulcer remarkably improved or healed. If any of the local procedures is too uncomfortable, the area may be first chilled with an ice-bag for 15 or 20 minutes, and occasionally the ice-bag may be reapplied after treatment. Cleansing of the superficial ulcer and elimination of secondary infection on external lesions or those involving hollow organs may cause considerable reduction in tumor size and thereby considerable amelioration of symptoms.

Any odor remaining may still be quite distressing to the patient and those around him. It may frequently be removed almost completely merely by changing dressings frequently in addition to the methods just mentioned. If some odor still remains, it may be adsorbed by animal charcoal prepared in small sachets about 4 inches square and kept close to the odoriferous area for 6 to 12 hours, then allowed to air out for twice as long. About six such sachets, used two at a time, will help a great deal to reduce obnoxious smells.

Very frequently, when the surface debris has been removed, it is desirable to have a re-evaluation by the radiologist and the surgeon. The former may help in further relieving secondary infection, if it is still present. Moreover, when the patient's life has been extended for an unanticipated number of months, it may be that he has lived longer than the originally

calculated tissue tolerance and may again be a candidate for irradiation. The surgeon too may reconsider his decision not to operate when he sees a more circumscribed lesion in more healthy surroundings. It must never be forgotten that irradiation and surgery are still the only proved modalities that can actually destroy cancer.

Abnormal collections of fluid, whether interstitial or in normal body cavities, must be removed if at all possible. Many cases respond to oral or parenteral diuretics. Edema of extremities, such as in an arm following radical mastectomy, may be relieved by application of elastic, non-adhesive (Ace) bandage, which should be removed and reapplied whenever it becomes loose, even every four to six hours at first. If swelling involves the individual fingers, one-inch strips of the same bandage may even be applied around each individual finger. The toes need not usually be so individually handled. The edematous part must also be elevated, even if only by two or three inches, as much of the time as possible. It is even justified to have the patient remain in bed for a day or two so that the extremity or extremities involved may be elevated on a pillow or suspended from an overhead sling.

Collections of fluid in pleural and peritoneal cavities should be removed as often as necessary, and occasionally it will be found that deposition of the fluid suddenly slows or stops completely. One patient with lymphosarcoma, who had more than 50 abdominal paracenteses in the next-to-last year of her life, lived a whole year after the last tap was required; and a postoperative mastectomy patient presently under treatment required six thoracic paracenteses from two to six weeks apart, yielding 500 to 2,600 cc. up to eight months ago, but has required none since. Recently she has responded well again to Thiomerin.

More specific therapy is directed against specific neoplasms, and here I have little that is new to contribute except to say that if you are going to use a specific, use adequate doses. Stilbestrol (10 mgm. three times a day) will help about 80 per cent of prostatic cancers; testosterone (50 mgm. every second day) will help most patients with inoperable or metastatic disease originating in breasts, ovaries, or cervix; nitrogen mustard may be of benefit in the lymphomas, I-131 or the thiourea group in thyroid malignancy, etc.

Recently I have used hydrocortisone in doses of 25 mgm. three times daily with great improvement in the patient's subjective state, and such subjective improvement may work a miracle on the objective condition. Other materials have been used, have fallen largely into the discard, but occasionally still may be useful. These include, as typical examples, cobra venom and the pteroyl group, but there are

many others. All I can say is that as of this moment I know of no magic cure, unless again I mention tender loving care.

It must never be contended among physicians that any of these procedures cures cancer, but any of them may do almost as well by making the patient feel better and may readily prolong the patient's useful life. To the patient, however, any purely temporary improvement must be built up as a potential or beginning cure. Moreover, in cases where some specific such as a steroid inhibits the disease for months or years, it may be difficult even for the critical physician not to become too enthusiastic.

Relief of pain need not be accomplished only by narcotics. Local infiltration of tender areas or nerve block may be of great value. By alleviating pain without causing the depressive effect of narcotics, we may give the patient a tremendous and remarkably long-lasting lift. We use 1 per cent Novocain without adrenalin, in amounts up to 20 cc. at a time, depending on the situation.

Pain relief may also frequently be quite feasible by administration of cold. Ice-bags may be applied directly to the painful area and may frequently decrease pain in a matter of minutes. If possible the ice-bag should be kept on the part around the clock. If more intensive cold applications are attempted, it may be necessary to give one mild dose of narcotic or sedative when they are started, as an early phase of the chilling process may be quite uncomfortable. Then the entire body or an involved part may be immersed in crushed ice for varying periods of time, according to the principles originally laid down by Temple Fay of my city.

The most convenient method of applying refrigeration at present is incorporated in the Thermorite machine. With this device, a part or all the body may be reduced in temperature close to a critical level of 72°F. with splendid and remarkably long-range pain relief. Unfortunately, in the almost two decades since this method was devised and although it is in fairly frequent use in surgery, it has not been used adequately for its original purpose, which was relief of pain for terminal cancer patients.

Incontinence should be controlled—of urine by Foley catheter and of feces by administration of paregoric or similar material. Superficial minor sores should not be neglected, as they may lead to major breakdowns, particularly in areas of contact with the bed. Protection may be supplied by "doughnuts" of soft materials. We have found that a mixture of castor and cod liver oils may maintain the skin's integrity for a long time, and such products as Desitin (zinc oxide and cod liver oil ointment) should be used as required. If possible the elbows should be protected by small adhesive bandages before they become irritated.

This case (sixth slide and seventh slide) is a bed sore, the result of an overzealous cordotomy to relieve the pain of a metastatic carcinoma of the cervix. The patient is paralyzed from the waist down and was admitted with the ulcer penetrating to the bony spine. You can see the healing since her admission in August. We followed our routine of urea crystals and regular cleansing of the area, then kept the ulcer protected with dressings well soaked in a mixture of castor and cod liver oils.

The lesser aspects of therapy of this type of problem deal with the psychology of the patient. In general, it is far better to keep the patient at home as long as his presence does not cause a deterioration of the peace of the household, then as soon as the need arises he should if possible be institutionalized at once. He should be kept ambulatory as long as possible, then, even after becoming bedridden, should be encouraged to sit up out of bed most of every day.

Every patient should be encouraged to help himself in every possible way. Food should be natural everyday foods rather than food supplements, no matter how tasty. Ice cream, hamburger, and juices may provide all the food-stuffs necessary for quite a period of time, yet pass with relative ease through an almost completely closed esophagus. Vitamin supplements should be given in liquid or powder form if necessary and feasible.

The management of these patients includes chiefly intelligent nursing. This care may often be provided by a relative, but it may require a professional nurse. In the home, of course, the responsibility for guidance falls largely or entirely on the physician. In nursing homes, moreover, with their frequent turnover of personnel, it may likewise be the physician's responsibility to be sure his orders are carried out. Orders given to the nurse today are of no value if another nurse is on duty tomorrow. And because so many practical nurses are being utilized in nursing homes at present, we should order not "routine colostomy care," for instance, but "aluminum paste around colostomy area every day."

The surroundings of a terminal cancer patient need not be lonely and gloomy. Provision for companionship and pleasant surroundings should be made at home or away; in fact, the possibility of such companionship may be used as a lure to the patient if he rejects the idea of a nursing home. Of course, the patient should be surrounded by optimism, however phony. This applies to all around him, but particularly to the physician. Every untoward event should be belittled or regarded as part of the disease. Every favorable happening, however trivial, should be built up to its maximum.

When the patient disobeys he should not, as in other conditions, be scolded for non-cooperation. Rather he should merely be told, "If things don't go

well, remember how you didn't do as I told you." For things won't go well and you will need every possible excuse to continue treatment with an intelligent, observing patient. Your failure, impossible to avoid, is concealed by the patient's misdeed.

It is a blessing that although these patients profess great unhappiness and wish for death even when they do not know their diagnosis, they are willing to grasp at any straw of hope they actually feel themselves. The physician who first taught me the care of these poor unfortunates, a surgeon with great experience in oncology, himself died of a laryngeal cancer a few years ago. It was amazing to note, as he went downhill, that he ignored all signs of trouble but grasped at and lived on the most evanescent signs of improvement. Here, as in so many other tragic situations, God blesses the victim with forgetfulness.

We never use the word "cancer" before this type of patient, using instead the euphemisms "malignant tumor" or "chronic ulcer." Our psychiatrist colleagues may call us childish in this regard, but we have been able to have all the cooperation we needed without unduly saddening the patient and have seen great depression induced when the patient learned his diagnosis prematurely. Rather, we allow the diagnosis to "seep in," so that when the patient finally realizes his hopeless state he is too tired to care.

Predicting the future of the patient may demand a degree of precision that is impossible with such a complex disease picture. As may be guessed from what was mentioned before, no hint of prognosis need normally be given the patient. We have been able to have wills drawn and other family matters settled by advising action "just in case" something happens. However, if the patient has somehow learned his diagnosis, one day of life may be quite precious. Who is to place a value on a day of some one else's life? If the patient is conscious and not in too much pain, that day may be worth a great deal to him. Hopeless disease? We all are going to die,

some sooner, some later. This patient will probably die sooner, but you and I still may precede him.

With regard to the family, however, such a lackadaisical method may be impossible or inadvisable. Members of the family may have to be summoned from great distances. If they are to remain an inordinately long time, this may cause great hardship, even on a non-breadwinner. The relative may reach the point of subconsciously wishing the patient dead and subsequently becoming severely involved emotionally because he is ashamed of his feelings. We usually keep one relative very closely posted, then try to err, if possible, on the side of optimism, so that the family will continue its day to day activity as much as they can.

In closing, I want to stress again the value of tender loving care in the supervision of terminal cancer patients. If you will give them of your best abilities, you may achieve astonishing results. It seems impossible, as I pointed out earlier, that cancer, probably the least psychogenic of all diseases, should be so subject to the emotions, but it is. Treat these patients as though they were your own loved ones, and the results will amaze you. Your function, I believe, is not merely to drag out the last gasp of the doomed patient, but to permit him to enjoy as much of his life as possible. This is the highest aim and duty of the physician.

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History after all is the story of people: a statement that might seem too obvious to be worth making if it were not for the fact that history so often is presented in terms of vast incomprehensible forces moving far under the surface, carrying human beings along, helpless, and making them conform to a pattern whose true shape they never see. The pattern does exist, often enough, and it is important to trace it. Yet it is good to remember that it is the people who make the pattern, not the other way around.

—Bruce Catton

Needed: Wider Medical Interest in Motorist Casualties

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The basic responsibility of medicine with regard to motorist injuries, as distinguished from all other injuries (traffic and otherwise), will always be the active and specific treatment of any and all kinds of these lesions. However, modern epidemiological approaches to these grave problems concerning our public health and safety, as exemplified by so-called human-engineering and crash-impact engineering points of view, are demanding wider and more positive medical participation in current programs devoted to safer motoring.

Since the ever increasing tempo and volume of both ground traffic and traffic injuries offer medicine opportunities to meet this challenge, it is my purpose to converge major attention upon three fundamental aspects of the clinical life history of motorists in general: before crashing, during crashing, and after crashing.

Some aspects of motorist safety are straightforward; a little reasoning makes clear their logic and their application. Others leave pitfalls for muddled thinking with consequent confusions and misunderstandings among the various disciplines and proponents involved. Safety during crashing may fall into the latter class during this stage of transition of motorist safety. Confusion will ultimately be eliminated when nomenclature, definitions, and methods of study are better understood.

Unless the atmosphere is cleared, there will continue to be unnecessary delays toward improved automotive safety design (not to be confused with safety engineering or safety performance of present cars). There will also be waste of money and effort and, most important, a let down along these lines by competent authorities currently engaged in basic, developmental, and field studies on safer motoring.

SAFETY OR SURVIVAL BEFORE CRASHING

Your own safety and that of others in your car depends upon three basic requirements: driver proficiency, good ground surfaces, and safe performance of the vehicles involved. The weakest link, it must be admitted, is the human ingredient. Driver proficiency lags as far behind improved road building as roads are lagging behind automotive engineering.

A reconciliation between human and inhuman ingredients is indicated. This is recognized by studies

now being made by Ross McFarland of Harvard, who hopes to achieve a better and safer relationship between design and human performance. Prospective drivers, when purchasing a car, should check factors of visibility and ease of handling in the garage, at the curb, when under way, and when parking.

The educational potential along these lines has barely been tapped. Medical groups stand in the vanguard of those who can orient the public to the basic factors regarding accident prevention, as distinguished from injury prevention. If local, state, and national authorities will demand driver screening, medicine's role will be a pre-eminent as well as an exacting one in establishing adequate medical standards of licensure. The importance of this phase is best learned from a study of accessory diagnoses noted by pathologists when doing autopsies on motorist fatalities.

A study of accessory diagnoses in 26 adults* who had had fatal accidents reveals that many conditions were present which might have had some bearing on the accident. Findings included active rheumatic myocarditis, bilateral cataracts, varying degrees of atherosclerosis (peripheral, cardiac, and kidney), degenerative conditions of various organs, and others.

Psychogenic and other physical factors which could increase accident potential should get more careful scrutiny and evaluation by medical as well as other related authorities. This work should also be coordinated with laws, codes, and enforcement. But, the most important single factor in accident prevention is driver proficiency. This is a matter of driver education of both parents and children at the local community level. The need for support of such programs is urgent. All doctors can participate here, and pediatricians especially can urge parents to educate teenagers in good driving practices and habits.

SURVIVAL DURING CRASH OR UPSET

Among the many human and mechanical variables involved under crash conditions, two common denominators emerge: human tolerance to impacts and crash forces. Both of these elements are best understood from a chronological discussion of what happens under decelerative conditions in both internal and external automotive environments.

The external environment has to do with force and structure alone, except when occupants are forced

Dr. Kulowski is a member of a special committee of the American Medical Association which is making a study of automotive safety design.

* From the files of the University of Kansas Medical Center, Kansas City, and Missouri Methodist and St. Joseph Hospitals, St. Joseph, Missouri.

bly ejected from the car during the external impact and are exposed to double jeopardy. Internal environment involves interactions between occupants and structures of the compartment. Thus, while the latter is a secondary event, it is primary in so far as human injury is concerned. These statements furnish the key to epidemiological methods of study regarding prophylaxis of motorist injuries, interactions among occupants, car, and highway.

The source of impact often determines the magnitude of the forces involved in the production of injury. This is being carefully considered by crash-impact studies from the standpoint of causative relationships and specific bodily reactions to crash forces. Prevention or moderation of injuries hinges upon this concept. Fundamentally, external and internal environmental events represent absorptions of uncontrolled dissipation of energy by structure and anatomy respectively.

The manner in which the automotive structure collapses under crash or upset conditions of deceleration is thought to have great influence on the amount and degree of energies which are transmitted to the occupant compartment and to the occupants. Roth formerly was engaged in research along this line, and Mathewson and Severy of the University of California are continuing that study. The automotive industry is now also carrying on research of a similar nature.

Mathewson and Severy are trying to determine how structures collapse to produce injuries to occupants. They have made some significant observations on front end reactions to full scale barrier impacts and upon anthropometric dummies within crash cars. Roth's original observations on head-on collisions were made after study of stunt driver crashes. These investigations have focused attention upon the tremendous forces evoked under crash conditions, both inside and outside the car, and of their brief duration, hundreds of g's on occupants versus milliseconds.

Medical groups should be aware of these basic contributions to motorist safety, offer their opinions and approval, voice their encouragement, and give scientific and financial support. Undoubtedly such effort will solve some of the present lethal conditions of internal automotive environment in accidents.

It has been found that the tolerance of the human body to high decelerative forces depends not only upon the magnitude of the forces acting upon occupants but also on the direction of the forces, their duration and rate of application, and the area of the body over which the forces are distributed, all of which are highly variable under accident conditions! Medical groups are particularly interested in the latter aspect with regard to survivors and fatalities. It seems to be the most tricky and complex of the problems encountered, chiefly because of lack of valid medical data.

Crash forces are impulsive for the most part but

may be inertial or crushing in nature. Fundamentally the limits of factors of safety of the human body are large (DuBois). DeHaven's observations on freely falling bodies and Stapp's work with human volunteers under severe linear decelerative conditions (upwards of 50 g's) substantiate that statement. On the other hand, Sergeant Paul's observations emphasize the low survival quotient of occupants in accidents he felt were survivable. This apparent paradox is being resolved by current investigations on medical and engineering facets of the problem, which would indicate that faulty safety design is the chief cause of death in accidents considered to be survivable ones, crashes in which the compartment was not demolished.

Injuries sustained under crash conditions are best considered under four general categories: (1) topical—lacerations, abrasions, and contusions; (2) skeletal—bones and joints; (3) internal—intracranial, intraspinal, above diaphragm, diaphragmatic, and below the diaphragm, and (4) peripheral—vascular and nerve injuries and complications.

Particularly important is clinical alertness to differences between primary injury and secondary complications as well as to morbidity and mortality from the standpoints of prophylaxis, diagnosis, and treatment. Otherwise, muddled medical thinking is inevitable. The following data resulted from my study of the records of 661 survivors admitted to the Missouri Methodist Hospital, St. Joseph, from late in 1949 until the end of 1954, treated by various members of the medical and surgical staffs. The fatalities reported are from records referred to earlier.

Exposure to motorist injury is universal and ever present.

Among survivors, about 80 per cent had two or more injuries. About 65 per cent received skeletal injuries; 55 per cent contusive and abrasive injuries, and 50 per cent lacerative lesions. Topical injuries far outnumbered those to the skeleton, and internal injuries were relatively infrequent.

Topical injuries occurred chiefly on the exposed parts of the body and most often on the face and head. The neck, chest, and trunk were most often injured in those suffering peripheral trauma. The pelvis and abdomen were definitely less vulnerable. The order of incidence of injury to the various bodily areas was as follows: extremity, head, face, chest, trunk, neck, pelvis, and abdomen. For fractures the incidence order was extremity, face, chest, pelvis, trunk, head, and neck. Internal injuries were most frequent in the head (concussion), abdomen, and chest.

The relative benignity of motorist injuries among survivors is dispelled by a study of pathology in fatalities. The outstanding feature was internal injuries, present in degree in every subject in the series.

From the angle of early death, the chest, not the head, receives the fatal injury. Mediastinal injuries were outstanding, noted in approximately 35 per cent and involving the pericardium, heart, and great vessels. The ultimate limit of bodily tolerances to impacts must be somewhere between those forces which produce internal injuries with survival and those forces which produce fatal internal injuries.

At the other extreme is another basic group made up of those who are in automotive crashes and are not injured at all. They demonstrate the fact that injury is not inevitable under crash conditions and that some features of current design are not always lethal.

Attempts to coordinate features of current car design with specific injuries are being made by several groups, among which are White of Motor Vehicle Research, Dye of Cornell Aeronautical Laboratory in Buffalo, Mathewson and Severy of the University of California, Sergeant Paul of the Indiana State Police, and the Cornell Automotive Crash Injury Research Group working under John O. Moore.

The latter group is undertaking the herculean task of correlating basic clinical and field factors through statewide surveys to accumulate valid statistical data. Working independently, Gurdjian, Lissner, et al., have called attention to engineering factors in the production of head injuries, chiefly skull fractures, and femoral fractures. The fact that skull fractures among survivors do not occur as frequently as had been thought does not deter them from their investigations. They are now studying cerebral concussion, the pioneer work on which was done by Denny-Brown.

The original work on mechanical injuries was done some years ago by DeHaven, who started with a study of plane accidents and later turned to the automotive field, continuing in that pursuit until his retirement. A special tribute is due him for creating interest in automotive safety design.

The researchers mentioned above have implicated certain features of modern interior automotive design as responsible for many injuries, naming especially the windshield, the dashboard, and steering controls. They have also criticized some structural elements of the automobile as a whole on matters having to do with over-all strength and ductility under crash collapse conditions. Although these are problems of engineering and design, improvements must rest upon medical data.

Some contributions to the medical side of these problems were made years ago by Straith, Stuck, Woodward, Beck, and others. Straith classified injuries according to occupant seating and its relation to impact and areas of potential injury. He emphasized guest passenger injuries, especially to those occupying the so-called "death seat," but my observations and those of Automotive Crash Injury Research do

not bear out his theory. However, his belief that the back seat is the safest has been strengthened by recent studies, and he was the first to suggest padding the dash.

Woodward's sharp criticism of automotive engineering focused attention upon this aspect of prophylaxis against injuries. The clinical patterns he established have been confirmed by the more recent studies of Snyder.

Several accomplishments can be claimed. These include knowledge of bodily tolerance to impacts under predetermined conditions of force transmission, definite data on the importance of a strong occupant compartment, and information on the practicality of some type of safety barrier interposed between occupants and potential injury areas. An efficient barrier would eliminate the urgent necessity for redesign of the cabin interior.

In considering prerequisites for safety under crash conditions, we must always remember that absolute safety under any and all conditions of crash deceleration cannot possibly be attained. Total safety is the ideal, of course, but students of the problem aim their studies at raising the present low survival quotient. These are the so-called survivable accidents, those in which the occupant compartment is not demolished.

Stapp's experimental observations and DeHaven's analysis of survivors of light plane accidents, with and without safety belts, definitely indicate that belts are well tolerated and prevent or moderate tendencies toward internal injuries. The addition of shoulder harness further increases the rider's security.

It seemed at first that the above statements were contradicted by a study of safety belts made by the American Society of Safety Engineers at Ohio State University, whose research was conducted with the kind of belt worn by window washers. They reported heart injuries in their experimental animals. However, the type of experiments performed and the positions of the animals during force loadings through the belts do not simulate the probable condition of human beings with safety gear under crash decelerative conditions. A clinical paper in a British medical journal several years ago was also derogatory to safety belts, but a restudy of the facts by DuBois refuted the British author's contention, as did experimental work by Bierman and Goldman.

Since the safety belt or its counterpart represents the simplest single adjunct now available for motorists, the medical profession should urge its adoption. That would be a start in the right direction, and advice could be modified or changed at a future time.

The efficiency of such safety gear would be best assured if it were applied at the factory. Its use by the motoring public could be influenced by an intensive educational program sparked by both lay and

professional groups. Physicians could cooperate by reporting types of injuries or lack of injuries to persons wearing belts during crashes (Campbell).

It must always be remembered, however, that without the structural integrity of the occupant compartment, no amount of interior revision, safety barriers, of knowledge of bodily tolerances would enhance survival to any appreciable degree.

SURVIVAL AFTER CRASHING

Despite physicians' familiarity with the effects of crashing, consideration of morbidity and mortality differentials calls for revisions in our concepts of diagnosis and treatment. Four groups of persons are concerned: survivors without injury, immediate fatalities, survivors despite injuries, and survivors who subsequently die of their injuries and complications.

The first group is important to safety designers. They must seek their own clues to these amazing escapes from injury and death.

The mortality differentials, on the other hand, implicate both engineers and doctors.

Immediate fatalities, estimated by Moore to be 15 per cent, represent both extreme and pure relationships between bodily tolerances and crash forces. Increasing the survival rate in this group remains a problem for engineers and manufacturers who have medical and engineering data already at hand. Even here, however, physicians have an interest because of physical conditions present among adults which might enhance death from impacts. Contributory factors as well as mechanical forces are operative all along the line. This factor is especially prominent when considered in relation to intermediate deaths, those within 48 hours of the accident, and the delayed mortality after that.

Before considering specific implications of delayed and intermediate deaths, it is well to consider mortality factors in general. In the Missouri Methodist Hospital series studied, the over-all mortality was 3.4 per cent. This is acceptable and even praiseworthy until the mortality is figured from the standpoint of degree of injury received. Forty-five per cent were considered mildly to moderately hurt, another 45 per cent were thought to have moderate to serious injuries, and 10 per cent were classified as dangerously injured. All of the deaths occurred in the latter group, 34 per cent. If we are to lower the mortality at all, it must be accomplished at this level of injury.

In the present series of deaths, 11 per cent were found dead at the scene of accident, 50 per cent died within 48 hours, most within eight hours after admission to the hospital, and 39 per cent died at intervals as late as eight days after admission.

The number of intermediate deaths focuses attention upon first aid and emergency care. The first is practically non-existent, thanks to current compli-

cated methods and the deterring admonition not to move injured persons until a physician arrives on the scene. It is disconcerting that humanitarian first aid is ignored, despite the fact that many accident victims exhibit obvious fractures of the extremities. It is also disconcerting to learn that attention to such injuries is delayed even after patients have been admitted to hospitals, that they have been submitted to transportation without the benefit of simple splinting or traction.

I suggest that methods of first aid be revised in keeping with increasing needs. This is a responsibility of medical groups. Second, this program should be sponsored by Red Cross and Civil Defense groups, partly as a training ground for possible catastrophic events to come. Third, training in first aid should be given truck drivers, bus drivers, and ambulance attendants who can be counted upon to be available in most instances.

Adequate first aid is the first step in a chain of care. If it can be administered by non-professional persons, physicians can concentrate upon life saving measures having to do with shock, almost always due to excessive internal bleeding, pulmonary ventilation, and cardiac arrest. In some cases a tracheotomy can save the life of a victim with inadequate pulmonary ventilation.

The chief causes of death in the intermediate mortality group in the study were cardio-respiratory difficulties and hemorrhage. Three major complications, pneumonia, fat embolism, and lower nephron nephrosis, worked against survival. Among those who died more than 48 hours after injury, chief causes of death were alterations of urinary output, fat embolism, cardio-respiratory troubles, and degenerative and inflammatory conditions. This implicates definitive treatment, not so much in regard to techniques but more as it relates to revision of therapeutic policy and priorities for the dangerously injured. Risks should be accepted in accordance with the exigencies of individual cases.

CONCLUSIONS

Accident prevention is everyone's problem. Nothing can supersede these common sense objectives. However, this is not enough in itself to stem the volume of traffic injuries and deaths, and it becomes necessary to supplement accident prevention and injury prevention or moderation and improved first aid, emergency and definitive treatment. The responsibility here belongs to medicine, engineering, and manufacturing. Since the problem is multi-faceted, its solution will require an integrated and multi-discipline effort.

In addition to showing professional interest, medical groups are asked to

1. Express approval and support of clinical, basic, field, and developmental research.
2. Step up participation along these lines, especially with regard to furnishing valid data on survivors and fatalities.
3. Increase space in medical journals for education and orientation purposes.
4. Educate patients on the desirability of accident and injury prevention.
5. Present data to engineers in order that they may appraise it from the standpoint of automotive safety design and decide on changes that may be indicated.
6. Encourage and cooperate with their own highway patrols.

The problems of motorist injuries are not at all exclusively surgical ones. Increasing pathologic information serves to point out a need for increasing alertness to the more subtle medical diagnostic and therapeutic problems involved. That in turn calls for more consultation and participation by all medical and surgical specialties, particularly the internist who should be made a member of any team administering to the more serious motorist casualties. Future reductions in the present mortality, expected from improved automotive design, will bring even greater challenges to

the medical profession. Are we ready for this probability?

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Radioactive Iodine in the Diagnosis and Treatment of Hyperthyroidism

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TERMINOLOGY

Classification of diseases of the thyroid gland has been standardized by the American Association for the Study of Goiter in the following way:

1. Nontoxic goiter
 - a. Diffuse (endemic and adolescent)
 - b. Nodular (adenomatous or colloid)
2. Toxic goiter
 - a. Diffuse (Graves' disease, primary hyperthyroidism)
 - b. Nodular (toxic adenoma, secondary hyperthyroidism)
3. Malignant goiter
4. Inflammatory diseases.

Further subdivision of toxic goiters into such classes as (1) diffuse toxic goiter with exophthalmos, (2) diffuse toxic goiter without exophthalmos, (3) nodular toxic goiter and (4) hyperthyroidism without goiter has been suggested.

This system is urged by those who feel that a clear line of distinction should be made between cases in groups 1, 2, and 4, which may represent pituitary disease, and group 3 which seems to represent a purely thyroid abnormality. Such subdivision is certainly necessary when investigation into the pathophysiology of hyperthyroidism is carried out.

However, in this discussion I shall take the liberty of ignoring the anatomical variations in the thyroid gland, except where specifically noted, and simply use the term hyperthyroidism to designate that disease condition which exists when overproduction of thy-

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roid hormone occurs. I feel this is justifiable since, regardless of the actual site of the primary disorder whether pituitary, adrenal, peripheral tissue, or thyroid, practically all diagnostic and therapeutic measures today are directed at the thyroid gland.

NORMAL THYROID PHYSIOLOGY

Thyroid Stimulating Hormone (TSH)

The function of the thyroid gland is controlled by a reciprocal regulatory system between the thyroid and the anterior pituitary in which a balance between the thyroid hormone and thyroid stimulating hormone in body fluids is maintained. Several factors enter into this arrangement, among which are the production and release of the hormones from their respective glands, the utilization and excretion of these substances, direct hormone interaction, and other factors such as the blood iodine level.¹

The evidence for the existence of TSH is impressive. Hypophysectomy leads to marked thyroid atrophy which can be reversed by either implantation with anterior pituitary gland tissue or injection of an acid extract of anterior pituitary. In the whole animal, injection of TSH causes marked thyroid hyperplasia with decrease in the iodine content of the gland, rise in blood iodine, tachycardia, increased basal metabolism rate, creatinuria, increased calcium, and all other signs of hyperthyroidism. Although several workers have suggested that no specific TSH exists but that thyroid function is regulated via the adrenal gland,² no one yet has been able to produce the signs of hyperthyroidism with any known adrenal fraction.

Isolation, identification, and measurement of TSH have been most difficult for, in contradistinction to thyroid hormone, it exists in such minute quantities that the most delicate bio-assay methods are not uniformly successful in finding TSH in the various body fluids. Two new methods recently described^{3, 4} may permit determination of such quantities soon. Such information is of vital importance to untangle the problem of Graves' disease.

While we know a balance exists between TSH and thyroid hormone, we are at a loss to explain the exact site and mode of the reaction. Thyroid hormone diminishes the output of TSH, if production of exophthalmos can be used to measure such output, and so does the administration of sufficient iodine. Direct iodination of the TSH in vivo reduces its thyrotropic potential greatly. Several hypotheses have been suggested to fit all our present knowledge together. One which is understandable, if not absolutely accurate, is shown in Figure 1.

Thyroid Hormone

Thyroid hormone is the only known metabolically

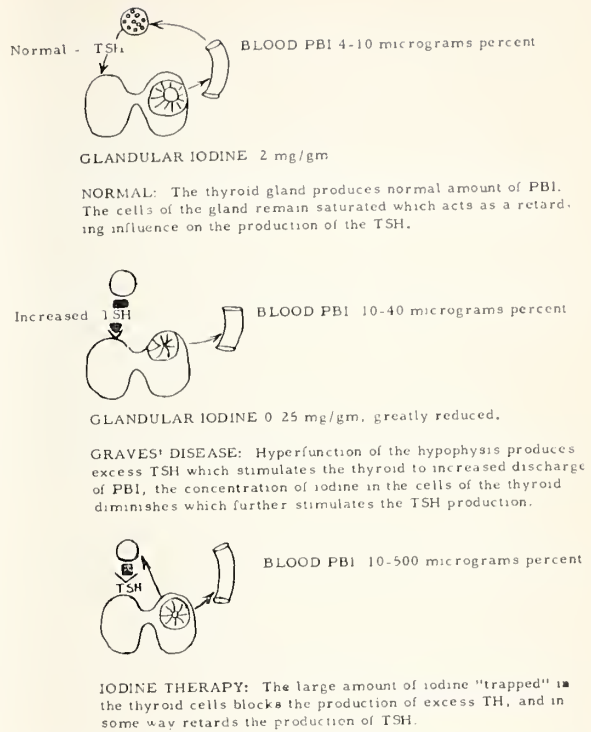


Figure 1. This shows a working hypothesis in which the saturation of the cells of the thyroid, not the PBI or hormone output, is taken as the regulating mechanism of TSH production.

active product of the gland, and its production is the only known function of the gland. While there is experimental evidence showing that iodination of protein can be accomplished in vitro⁵ and protein bound iodine (PBI) is found in the blood of completely athyroid animals,⁶ suggesting that production of compounds indistinguishable from thyroid hormone may be accomplished in the absence of glandular tissue, certainly the great part of the hormone arises in the gland.

The precise identity of thyroid hormone is subject to great debate. Several workers using fractionation and acetone precipitation studies concluded that thyroglobulin was the active substance.⁷ Another group⁸ concluded that a thyroglobulin-like substance for which the name thyrenzyme was proposed actually produced metabolic effects in the tissues.

Recent studies concerning the nature of the thyroid hormone in various thyroid states by use of paper chromatography indicate that thyroxine is the final product,^{9, 10, 11, 12, 13, 14, 15} and paper electrophoretic studies find thyroxine bound to a plasma globulin component in the circulating plasma.¹⁶

Thyroxine has also been isolated in the free form in bile and bound as a glucuronide in the gastrointestinal tract by Chaikoff et al.¹⁷ by means of paper chromatography.

An analogue of thyroxine, triiodothyronine, has been recently isolated from human plasma,^{18, 19} and

this compound has been found to produce greater calorigenic effects²⁰ than thyroxine in the treatment of myxedematous persons if it is administered in concentrations below 10 gamma/kg. of body weight.

Our present knowledge of iodine metabolism is best summarized in diagrammatic form showing the various metabolic pathways of iodine. This diagram is illustrated by Thorn et al.²¹

The principal function of thyroid hormone is that of a catalyst acting upon the oxidative processes of the body cells. Tissues from hypothyroid animals have a low oxygen consumption, while those from animals rendered hyperthyroid utilize more oxygen than normal. A secondary function is its reciprocal action upon the anterior pituitary; ablation of the thyroid causes hyperplasia of the pars anterior, degeneration of the basophil cells, and disappearance of the acidophils.

The amount of thyroid hormone produced depends upon the stimulus supplied by the thyrotropic hormone and the amount of iodine available. The rate of production under normal conditions is quite constant; it has been estimated to be 0.35 mg. of thyroxine per day.²²

Iodine Metabolism, Chemical

The study of thyroid function is almost synonymous with the study of iodine metabolism, for the element is essential to the synthesis of the gland's hormone and has no other apparent function. The minimal daily requirement of iodine in adults is about 25 gamma; however, 100 to 200 gamma is considered more nearly the amount needed to keep an individual adequately supplied, due to variations in absorption. Excretion in the urine of from 20 to 70 gamma a day occurs on such an intake.

The total body iodine is 50 mg., of which 10 to 15 mg. is in the thyroid. Although the amount in the gland is slightly less than one-half the body total, the concentration (2 mg./gm. of dried tissue) is 180 times that found in muscle. As will be mentioned later, this degree of saturation does not exist in hyperthyroidism.

The concentration has been subdivided into inorganic, which is probably dietary in origin, and organic (also called hormonal, protein bound, and precipitable) which represents the circulating hormone.

Although the techniques for determining blood iodine are very complicated,^{23, 24, 25} results from competent laboratories show quite consistent values. The most widely used method, that of Chaney,²⁶ gives a normal range of PBI of 4-8.5, mean, 5.5 micrograms per cent. Values over this are suggestive of hyperthyroidism. This is one of the most specific of laboratory tests, for no other disease causes alterations in blood iodine values.

It should be borne in mind that elevation of blood iodine, both organic and inorganic, will be found following ingestion of iodine in normal people. Average size doses of Lugol's solution disturb the test for two to three weeks. Radiopaque substances are even more confusing, for falsely elevated levels have been found three years after myelography, a year after bronchography, nine months after intravenous pyelography, and three months after cholecystography.²⁷

The chemical determinations of iodine substances and iodine concentrations have given considerable information about amounts and types, but with the advent of radioactive iodine a method for the study of movement and function was found.

Iodine Metabolism, Radioactive

As is characteristic of isotopes, carrier-free radioiodine acts chemically and physiologically in the same manner as its natural stable isotope I-127 except for its radiation properties. This has made it possible to measure and observe aspects of iodine metabolism heretofore indiscernible. It should be borne in mind that the mass of carrier-free I-131, 0.00008 gm. per millicurie, is infinitesimal and cannot possibly effect chemical reactions in vivo in the tracer doses used.

Orally ingested radioiodine is rapidly absorbed from the stomach and can be detected in the peripheral circulation within three minutes. Absorption is usually complete within two to three hours, although it may be slightly retarded by the presence of food. Usually not more than 3 per cent and never more than 11 per cent is excreted in the stools. Subsequent to absorption of I-131, the curve of serum concentration shows an initial rapid rise, reaching a peak at about one hour. By this time an exponential fall becomes marked, representing urinary excretion and thyroid accumulation. Finally the serum level approaches a plateau which represents the appearance of protein bound I-131. In case of a continual rise, hyperthyroidism is suggested.

The concentration of radioiodine in tissue other than the thyroid is minimal. No exact figures are available concerning final equilibrium; however, 57 hours after the administration of a large 63 MC dose, the following concentrations were found: muscles 3.3 per cent, liver 3.9 per cent, brain 2 per cent, lungs 0.6 per cent, and kidneys 0.1 per cent.²⁸

The isotope is excreted promptly in the urine, over half of it appearing in the urine during the first 48 hours; following this only traces are present.

Practically all the I-131 not disposed of by the kidneys is concentrated in the thyroid.

Metabolism of iodine by the thyroid may be represented as a three-phase process. The initial step or, in other words, the accumulation phase, probably involves only iodide free of protein linkage. The ele-

ment at this stage is merely "trapped" by some mechanism in the form of iodide in the epithelial cells of the follicles and not chemically altered. It appears that this "trapping" mechanism is blocked by KSCN and enhanced by TSH.²⁹ The ingestion of KSCN will cause rapid discharge of "trapped" iodide in glands treated with these substances but will not influence the amount of protein bound iodine.³⁰ The next step is the oxidation of iodide to organic iodine by a peroxidase. This oxidation appears to be inhibited by thiourea compounds and sulfonamides.³¹

Simultaneous with the trapping of iodide in the normal gland, peroxidase oxidation of iodide to iodine and conversion to organically bound iodine and accumulation as diiodotyrosine and thyroxine in the colloid occurs. Radioautographs show about 90 per cent of the I-131 in the gland to be in the follicular spaces in the protein bound form 30 minutes after ingestion.³² No radioiodine was seen in the cells by several workers; however, later workers showed by more rapid extirpation that the iodine passes from the cells into colloid. The exact nature of the hormone in the gland is in doubt, but analysis shows that it is composed of approximately 25 per cent thyroxine and 75 per cent diiodotyrosine.

The third and final stage is secretion. In contradistinction to the trapping and conversion which are quite rapid processes, being completed within two days, the secretion of I-131 in the protein bound form, apparently hormone, is much slower and appears to be under the control of proteolytic enzymes. Very little protein bound radioiodine can be detected in the blood within the first 24 hours, and the level remains quite constant for many days.¹⁵

ABNORMAL IODINE METABOLISM IN HYPERTHYROIDISM

There seems little doubt that more than one type of hyperthyroidism exists; however, in the light of present knowledge it is safe to say a common denominator exists in all forms, and that is production of thyroid hormone in excess of body needs. Study of the metabolism of iodine in hyperthyroidism with I-131 has shown this to be true.

Absorption of tracer doses from the gastrointestinal tract is not measurably altered by Graves' disease unless severe diarrhea is encountered.³³ The entire course of events subsequent to absorption differs markedly. The hyperfunctioning gland, having a very low iodine concentration, takes up much more of the given dose and at a greater rate than normal. This is reflected in the prompt disappearance of inorganic radioiodine from the blood stream and diminished urinary excretion of I-131. The drop in blood level of circulation I-131 caused by rapid absorption by the thyroid is short lived for within four to eight hours, and in some very severe cases one

hour, the level of protein bound radioiodine starts to rise.

RADIOACTIVE IODINE IN DIAGNOSIS

Various aspects of the body's handling of I-131 have been studied in an effort to arrive at a simple and reliable test to establish the presence or absence of disease.

The urinary excretion of radioiodine subsequent to ingestion was the first method, and it is still widely used. The method is simple and has the advantage of requiring only two visits by the patient. A tracer dose of 40 to 100 microcuries of I-131 is given, and all urine for 24 or 48 hours is saved. The quantity of radioiodine excreted is compared to the quantity given and the ratio expressed as per cent (See Figure 2).

The rationale for the test is simple; the hyperactive gland takes up more I-131 than the normal, leaving less to appear in the urine.

Comparison of Per Cent Excretion of I-131 with Respect to Time in Various Thyroid States

Author	Time	Normal	Hyper	Hypo
Werner ³⁴	24	52	17	55
Spanse ³⁵	48	52-85	6-33	73-91
Orshy-Schmidt ³⁶	24	42-80	5-43	48-93
Pawson ³⁷	Total	80	16	..
Keating ³⁸	48	60-70	7-20	..
Soley ³⁹	24	53-81	..	91-94
Arnott ⁴⁰	48	52-62	11	91

Figure 2

The rate of excretion of radioiodine in the urine rather than the amount has been analyzed. This requires frequent specimens and numerous determinations so is not applicable as a clinical tool. The added information is of little if any help.

Direct measurement of the in vivo uptake of the given dose by the thyroid gland, using an externally placed counter, has been widely used, and many modifications have been suggested and investigated to increase the sensitivity and specificity of this method. The most common technique uses a G.M. tube, modified G.M. tube (gamma sensitized), a heavily shielded collimated scintillation counter, or scanner device.

The patient is given from 1 to 100 microcuries of I-131 orally, depending upon the sensitivity of the detector used. At 24 hours the amount of in vivo I-131 in the thyroid (total) is measured by placing the detector approximately 25 cm. from the isthmus of the thyroid. A thigh count is also made at this distance

and this activity subtracted from the total neck activity over thyroid to correct for background neck activity. This corrected neck activity is then compared to the activity of a 25 ml. I-131 standard containing 100 per cent of the dose given, measured at the same distance (25 cm.). The result of the corrected neck (thyroid) activity is then expressed in per cent of standard dose activity. Figure 3 shows the ranges reported by several investigators.

Through the use of highly sensitive gamma detectors (scintillation), doses as low as 0.2 microcuries have been used for accurate in vivo uptake measurements over thyroid. This offers the advantage of low dosages, thereby allowing repeat doses which are still within the tolerance range.

Comparison of Per Cent of 24-Hour Uptake of I-131 in Selected Thyroid States

Author	Normal			Hyper			Hypo		
	High	Low	Av.	High	Low	Av.	High	Low	Av.
Werner ⁴¹	34	11	21	76	33	60	4	1	3
Hamilton ⁴² Soley	45	10	20	92	13	60	10	0	5
Freedberg ⁴³	65*	14	28	97	42	64	..	..	14

* Only one above 41%, this in a non-toxic diffuse goiter.

Figure 3

Earlier reports of this method were not too satisfactory as several cases of obvious thyrotoxicosis had normal and even low uptakes. Several explanations may be offered in the light of our present knowledge. The workers used rather large doses of I-127 as carriers; we know this latter substance may alter the uptake of I-131 by competing for thyroid space.³⁵ Many patients had received iodides, or one of the goiterogenic drugs, or both, prior to study, and this markedly reduced I-131 uptake. A final possible source of error lies in the fact that small tracer doses, 15 to 150 microcuries, may reach their peak uptake in one to six hours in highly overactive glands and be in a large part excreted by the end of 24 hours. Measurement of the uptake at one, six and 24 hours has been advised to overcome the latter error.

In seeking to overcome the variables inherent in external counts, gland size, gland position, and thickness of the overlying tissues (scatter, geometry, and absorption), one group⁴³ used four and eight counters arranged in a circle with the patient placed in the center. Despite the authors' enthusiasm, critical analysis fails to reveal any advantage over the single tube or scintillation head measurement.

The rate of accumulation of iodine by the thyroid has been determined and the resulting gradient has been used to differentiate hyper- and hypofunction. This method, plotting the uptake against the square

root of the time, offers no advantage over simple measurement of glandular uptake.⁴⁴

Finally, the rate at which radioactive iodine is bound to protein has been studied. This test is based on the premise that protein bound iodine is hormonal iodine, and the thyrotoxic thyroid by definition puts out an increased amount of such iodine. This fact was noted in animal experiments repeatedly but was not mentioned in human studies until 1949.⁴⁵

A unique blood conversion method,⁴⁶ presented in 1953, uses the determination of the red cell:plasma I-131 ratio for calculating the rate of formation of nondiffusible (organic) fraction of I-131 in plasma under varied thyroid states. Maximum differentiation of apparent hyperthyroid and euthyroid states was observed at 24 hours, whereas maximum differentiation between hypothyroid and euthyroid states was not observed until 72 hours following the ingestion of inorganic I-131.

This method is now used as a routine diagnostic procedure by employing the increased gamma sensitivity obtained with a well-crystal scintillation counter. With this high sensitivity, I-131 activity of cells and plasma can be followed for at least 72 hours following the ingestion of only 25 to 30 microcuries of inorganic I-131.

This method offers a greater degree of differentiation of thyroid states than either the in vivo uptake or urinary excretion methods.

An excellent series of cases studied diagnostically with I-131 was published in 1950 by Keating et al.⁴⁷ These authors employed seven methods in all cases and compared them. The observation consisted of:

1. *Urinary excretion*: the proportion of the tracer observed in the urine collected for 48 hours after administration.
2. *Renal fraction*: the fraction of the dose that would ultimately appear in the urine if the initial simple relationship obtained.
3. *Disappearance rate*: the proportional rate expressed as per cent of tracer dose per hour at which the ingested I-131 disappears from the blood.
4. *Renal excretion rate*: the rate expressed as per cent of tracer dose per hour at which I-131 appears in the urine.
5. *Extrarenal disposal rate*: the rate at which I-131 is being removed from the blood by all tissues other than the kidneys.
6. *Thyroidal accumulation*: the per cent of the tracer dose found in the thyroid by external count at 24 hours.
7. *Accumulation rate*: the proportional rate expressed as per cent of tracer per hour at which the thyroid accumulates the tracer.

After these exhaustive studies the authors concluded, "The striking feature about the four measures of radioiodine accumulation which we have compared

is the fact that they are all nearly equal to one another in diagnostic sensitivity." They pointed out that false positive thyroid accumulation and urinary excretion were seen in patients with impaired renal function and cardiac decompensation.

In summary then, any of several tests is satisfactory in determining the thyroid status with I-131. The normals vary slightly from laboratory to laboratory but are quite distinct from the findings in hyperthyroidism. There is less clear delineation in hypothyroidism, and frequently the I-131 study is inconclusive. The factors, other than thyroid dysfunction, which cause alterations in results that must be considered in every case are:

1. Ingestion of iodine in any form.
2. Ingestion of any goiterogenic drug.
 - a. Sulfonamides
 - b. Thiourea, thiouracil
 - c. Cyantis
3. Ingestion of hormones.
 - a. ACTH, cortisone
 - b. Thyroid
4. Exposure to radiopaque material.
 - a. Lipiodol-bronchoscopy
 - b. Priodax-cholecystography
 - c. Diodrast-pyelography
5. Cardiac decompensation.
6. Impaired renal function.
7. Addison's disease.

RADIOACTIVE IODINE IN THERAPY

The rationale of I-131 therapy is based on two well-established facts:

1. Radiation will destroy thyroid tissue and thereby reduce hormone output.
2. Radiation can be delivered quite selectively to the thyroid gland by I-131 due to the gland's affinity for iodine.

I-131 gives off two kinds of radiation, beta particles with maximum energy of 0.6 million electron volts and a maximum range of 2.5 mm. in tissue, and gamma rays with energies of 0.37 to 0.08 million electron volts and much greater range of penetration. The beta particles expend practically all their energy within the body of the gland and are actually the effective emissions because the more penetrating gamma rays pass out of the gland and cause practically no ionization.

The unit commonly used to express quantity of the isotope is millicurie, which is by definition the quantity undergoing 3.7×10^7 disintegrations per

second. In order to establish a comparison between the radiation produced by x-ray and isotopes, the term "equivalent roentgen" has been introduced. This term applies to beta radiation only and represents that quantity of beta particles which under equilibrium conditions releases in one gram of air as much energy as one roentgen of gamma rays. Some idea of their relative size can be appreciated if one remembers complete disintegration of 1 millicurie of I-131 per gram tissue produces 160,000 equivalent roentgens. Dosage is usually expressed in terms of milli or microcuries, but a simple formula can be used to approximate the dosage delivered to the gland in equivalent roentgens (e.r.). This formula was derived from the original work of Marinelli et al.⁴⁸

This allows one to compare the energy delivered to a tissue by the isotope to the energy delivered by a similar amount of x-ray, the biological effects of which are much better known.

The dose of I-131 needed to produce the desired changes within the thyroid depends on several factors.

The first is the size of the gland. This is most difficult to determine with any certainty. One experienced observer⁴⁹ who checked his impressions against the actual size of the gland as found at surgery, was unable to reduce his error to less than 25 per cent, so we may assume an error of 50 per cent would not be surprising in average hands. Distressing as such inexactitude may be to physicists and radiologists who have calculated the dosage in exact terms of microcuries per gram, as we will see later, clinical responses can be predicted quite accurately by simply calling the glands—not palpable, palpable, large, and extremely large.

The second factor is the effective half-life. This involves the actual per cent of the dose given that is taken up by the gland and the rate at which it is excreted by the gland. This can be determined by tracer dose prior to therapy, for the gland handles doses of from 10 to 25,000 microcuries very much the same in most cases.⁵⁰ When glandular size and effective half-life have been determined, one variable remains which defies estimation.

The sensitivity of the individual thyroid to radiation. This cannot be anticipated prior to treatment, and variations from the mean will lead to both over and under dosage. Delivery of 9000 e.r. to the diffuse hyperplastic gland is a generally accepted reference dose in diffuse glandular enlargement. This is the average x-ray dosage found to produce the de-

$$\text{dose, e.r.} = \frac{\text{microcuries given} \times \text{uptake \%}}{\text{weight of gland in grams}} \times \frac{\text{effective half-life (days)}}{8 \text{ half-life I-131 (days)}} \times 160$$

Formula I

sired therapeutic effect. Much greater doses are needed to affect nodular and normal glands.

Once the two measurable factors listed above have been determined, the required dose to deliver 9000 e.r. can be derived by rearranging Formula I.

While such calculations may give an air of scientific accuracy to the dosimetry in I-131 therapy, one should realize that any formula in which a major factor may err by 50 per cent cannot be taken too seriously. At present, certain clinics are using arbi-

RESULTS OF RADIOACTIVE IODINE THERAPY

Whether the rationale of I-131 therapy is sound or faulty is unimportant; the results obtained by such therapy are the criterion by which the method must be judged. Now, 13 years after the first trial of I-131, enough data has been compiled to make it possible to reach some conclusions concerning its efficacy. The general results of several of the larger series reported to date are contained in Figure 4 and will be discussed later. Brief analysis of the series ar-

$$\text{Treatment dose in microcuries of I-131} = \frac{9000\text{r}}{160 \text{ rep} \times \frac{\text{Biol } \frac{1}{2} \text{ life (days)}}{\text{Physic. } \frac{1}{2} \text{ life—8 days}}} \times \text{Max. uptake \%} \times \text{Est. gram wt. gland}$$

Formula II

trary doses which they prescribe as follows: not palpable, 2 millicuries; palpably enlarged, 5 millicuries; very large (two to three times normal), 10 and 15 millicuries. Only through such arbitrary means has the dosage required in toxic nodular goiter been arrived at.

The determination of the dosage of I-131 needed to obliterate thyroid function is still only a quasi-quantitative procedure. Attempts to compute dosages on estimated thyroid weight and on measurements of uptake and disappearance rate of a previous tracer (test) dose have not been entirely successful. Due to slow depletion of thyroxine stores in the gland, a clinical evaluation of the effect of a therapeutic dose is subject to a delay of many weeks. A method for early estimation of the effect of thyroid function would save months of time in the clinical management of the patient. The identification of the iodinated components of plasma by paper chromatography led certain authors to conceive the idea that alterations of these components during I-131 therapy might be valuable in predicting therapeutic results.

These investigators¹⁵ used filter paper chromatographs made of the blood plasma of 19 hyperthyroid patients and four patients with intractable angina pectoris. Plasma radioautographs show correlation as follows: disappearance of the thyroxine band, usually between two to seven days, forecasts clinical hypothyroidism; reduced intensity of the band during this same interval forecasts euthyroidism.

This suggests that chromatographic plasma analysis may provide the means for obtaining closer control of I-131 therapy of the thyroid. Within two to seven days, the evidence obtained appears to indicate that one can predict the therapeutic result which clinically is not evident for one to five months because of the slow depletion of thyroxine stores in the gland.

ranged in chronological order shows a gradual improvement in results and a simplification of methods.

Hertz and Roberts⁵¹ reported in 1946 on 29 cases treated from 1941 to 1946. Their data are hard to evaluate for they used a mixture of I-130, 90 per cent and I-131, 10 per cent. This makes comparison of dosage impossible, for the 12.5-hour half-life of I-130 gives a biological half-life very different from that of the 8-day isotope, I-131. Their high failure rate, 9 in 29, may have resulted from too prompt institution of iodine therapy following the administration of the radioiodine, for we know that large doses of stable iodine have the property of washing out radioiodine if given within 72 hours.

The same I-130 and I-131 mixture was used by Chapman and Evans⁵² on 22 patients treated from 1943 to 1945. These workers used considerably larger doses and by so doing were able to cure hyperthyroidism in 20 of their 22 cases. However, six of their patients noted mild reactions resembling radiation sickness, and four of those cured of thyrotoxicosis developed myxedema requiring thyroid therapy.

In a later series of 48 cases treated with I-131, Chapman obtained cures in 36 on a single dose and improvement in 12. The author used the status six months following a single dose as his criterion for cure or improvement.

Soley and Miller⁴⁹ reported their results on 33 cases which were treated with 1,000 to 2,000 microcuries of I-131 every month until a therapeutic response resulted. Twenty responded well, becoming euthyroid in one and one-half to six months; doses ranged from 800 to 4,500 microcuries, averaging 2,726. The 13 failures were in the patients who had the largest glands and highest basal metabolism rates. When this series was extended to 61 cases and the initial dose increased in keeping with gland size and uptake, the failure rate fell from 33 per cent to 16

per cent. These 16 per cent were all improved but not euthyroid; hypothyroidism and myxedema occurred in 5 per cent.

Haines and Keating⁴⁷ attempted to give an initial satisfactory dose by administering 200 to 250 microcuries of effective I-131 per gram of thyroid tissue. Of 40 such cases, 27 had good results, 8 fair, and 5 poor following a single oral dose ranging from 2,600 to 20,000 microcuries. A second dose given to the 8 fair cases resulted in raising the total of successes to 35. This series was made up of complicated cases, and the five failures were in patients

dosimetry was made prior to Crile's⁵⁵ excellent report. Crile reported the only fairly large series of toxic nodular goiters treated with I-131. The 37 patients were selected by the following criteria: all were 40 or older; solitary adenomas were not treated; any case showing recent growth or in which the character of the nodules suggested malignancy was excluded. The dosage was arrived at by trial and error as the formulas used in diffuse toxic glands failed to apply to this group. As will be seen in Figure 5, the total dose needed to effect remission correlated roughly with gland size.

Comparison of Results of I-131 Therapy following Varied Doses of Radioiodine

	Chapman	Soley Miller	Hains Keating	Crile		Printzmetal		Moe		Williams	Total
				Diff	Nod	Comp.	Uncomp.	Diff	Nod		
Number	65	61	40	12	37	18	26	67	33	80	439
Range of I-131 Microcuries	10000	3060 7556	—	7200	11000 77000	5320	4400	1100 17800	1200 43900	—	—
Time till normal months	2	3.2 13.4	2.6	4	5	4	3	3	—	—	—
Hypothyroid & Myxedematous	6%	5%	17%	8%	0	0	15%	15%	6%	5%	8%
Cure of hyper- thyroidism: Good	86%	84%	67%	91%	86%	89%	96%	85%	94%	95%	91%
Fair	12%	16%	20%	9%		11%	4%				6%
Poor	2%		13%		14%						3%

Figure 4

with cardiac decompensation and renal insufficiency which may have led to erroneous diagnosis.

Williams⁵³ treated 98 unselected cases of thyrotoxicosis with I-131, attempting to give a satisfactory initial dose. Follow-up on 80 of these in 1948 revealed no failures; 76 of the patients had been euthyroid for from 4 to 12 months. The remaining four were myxedematous. This gives the amazing result of 95 per cent cure!

Printzmetal⁵⁴ used the 8-day isotope to treat 18 patients in whom surgery was contraindicated because of multiple recurrences, heart failure, emotional lability, or extreme toxicity not amenable to thiouracil. Sixteen were rendered euthyroid, one improved, and one was a frank failure. The failure occurred in a toxic adenoma. The total dose was 11 millicuries. In the light of Crile's report, vide infra, this patient received an inadequate dose.

In a series of 26 uncomplicated cases, the same author reported good results in 25 with improvement in the other case. However, in this series the occurrence of hypothyroidism was 15 per cent.

Very little differentiation between diffuse toxic goiter and nodular toxic goiter with reference to

Class	Size	Total Dose (in Millicuries) Needed to Cause Remission
Class 1	less than 50 gm.	23.4
Class 2	50-100	30.6
Class 3	100-150	37.6
Class 4	More than 150	66.2

Figure 5

Initial doses ranged from 7 to 15 in Class 1 to 17 to 28 in Class 4. This amount is much more than needed in the diffuse gland; however, the author states that he now uses an initial dose of from 17 to 21 millicuries routinely regardless of gland size. This regimen induced remission in 32 of the 37 cases. No myxedema was seen. The five cases not in remission by the end of six months received total doses of 27 to 77 millicuries. The author concluded that most cases of toxic nodular goiter can be controlled by I-131 and that in cases where surgery is not feasible it is the treatment of choice.

In September 1950, Moe⁵⁶ reported on 100 cases, 67 diffuse and 33 nodular, that were treated with an initial dose of 100 millicuries I-131 per gram of tissue as calculated by Formula II. The patients were

seen in two months when further therapy was decided upon as follows: no improvement, repeat the initial dose; marked improvement, give no further I-131. The degree of improvement between these two extremes was estimated by the usual clinical means, and a proportional dose of the initial dose was given, i.e., a patient improved by half would receive half the initial dose. This method gave 88 per cent cures, 9 per cent hypothyroidism, and 3 per cent myxedema. It is interesting to note that doses used in nodular glands were larger than the diffuse and the occurrence of hypothyroidism much less, 6 per cent to 15 per cent.

An over-all statistical analysis of the 439 cases listed in Figure 4 gives the following results, if only abolition of hyperthyroid is considered:

Good—91 per cent
Fair — 6 per cent
Poor — 3 per cent

The incidence of hypothyroidism and myxedema has to be taken as a group for most authors did not separate these conditions. There were 34 cases reported as needing thyroid therapy, an incidence of 8 per cent.

COMPARISON OF RADIOACTIVE IODINE WITH OTHER MEANS OF TREATMENT

At present there are three methods other than I-131 which can be considered in the treatment of hyperthyroidism. A comparison of these methods with radioiodine therapy will point out the advantages of each.

1. *External radiation.* Application of radiation to the thyroid by x-ray or radium collar has been used very little in recent years. Results from different series varied greatly. Groover and Christie⁵⁷ reported on 252 cases treated by x-ray. They administered 200 r to 3 parts every 3 weeks until a satisfactory result ensued. They report: 80 per cent cured; 15 per cent improved; 5 per cent failures. Among their successes, one-third were cured within 18 weeks; one-third in from 18 to 30 weeks, and one-third by the end of 30 weeks.

On the other hand, Means,⁵⁸ in summarizing all the cases treated by x-ray at Massachusetts General Hospital, felt that one-third were cured, one-third were improved, and one-third resulted in failure. In either case this method does not compare to I-131 in results, simplicity, cost, nor speed, and it retains the drawback of I-131, namely possible cancerogenic properties.

2. *Propylthiouracil.* This drug is named specifically, for it is the most effective and least toxic of the thiouracil group of drugs now available. A huge volume of literature has accumulated concerning the

drug, the consensus of which expresses the following general ideas:

Control of hyperthyroidism can be achieved in 98 per cent of patients who can tolerate the drug in doses of 150 to 600 mg. a day.

Remissions of long duration will result in from 0 per cent to 85 per cent after several months of continuous adequate therapy (50 per cent probably is about right.)

Toxic reactions occur in about 15 per cent of all cases; however, less than 1 per cent will be severe enough to force discontinuation of therapy.

The disadvantages of the drug are the necessity of frequent blood counts and protracted medical supervision. Mortality directly attributable to the drug is 0.5 per cent.

3. *Surgery.* Certainly surgical treatment of diseases of the thyroid is one of medicine's true triumphs. The results of subtotal or total thyroidectomy in treatment of hyperthyroidism show marked uniformity from one group to another.

Cole,⁵⁹ in reporting the series at the University of Illinois Research and Education Hospital, noted a mortality of 0.61 per cent in 487 cases of diffuse goiter and 1.58 per cent in 315 cases of toxic nodular goiter. He made no mention of the occurrence of postoperative hypothyroidism but did mention an instance of 1.5 per cent vocal chord palsies.

Cattel⁶⁰ reported an operative mortality of 0.24 per cent in 1,630 consecutive patients operated upon for hyperthyroidism at the Lahey Clinic. He noted hypothyroidism in 4.5 per cent of this series and recurrence in 2.4 per cent.

Drawing from these two series, both large and representing the best results that can be expected, one gets the feeling that surgery is safe, uncomplicated, has no failures and few, if any, poor results. However, before accepting these results, accurate as they may be, the results obtained at the University of California Hospital⁶¹ should be mentioned. It may or may not be significant that follow-up on this group was not purely a function of the surgical staff but was a cooperative effort of the medical, surgical, ophthalmological, and radiological departments.

One immediately notices that the incidence of postoperative hypothyroidism is about four times that noted in other series. In other respects the results are comparable with those of the Chicago and Boston groups. In general then, we can summarize surgical therapy by saying: In well trained hands there will be 3 per cent failures; that is 0.5 per cent to 1 per cent deaths and 2 per cent to 2.5 per cent recurrences. Unsatisfactory results will occur in an additional 2.5 per cent, 1 per cent from recurrent laryngeal nerve paralysis and 1.5 per cent from postoperative tetany. Therefore, it seems that 95 per cent good results can be anticipated.

Complication	379 Diffuse Toxic	179 Nodular Toxic
Hypothyroidism	20 %	21 %
Myxedema	9.2%	5.5%
Recurrence	3.6%	0.5%
Hypoparathyroidism	1.5%	0.5%
Vocal cord paresis	3.3%	4 %
Vocal cord paralysis	2.1%	3.1%
Mortality	1 %	0.5%

As one compares the methods of therapy, several facts seem apparent. External radiation offers no advantage over isotope therapy and will probably continue to decrease in usefulness.

Thiouracil drugs offer slightly more rapid return to normal than I-131 alone, but the added expense of frequent blood studies and follow-up visits as well as the high incidence of troublesome toxic reactions makes these drugs onerous to both patient and physician.

Surgery offers a cure rate of 97 per cent as opposed to 91 per cent in therapy with I-131. However, surgery has a definite mortality, a definite incidence of tetany, and recurrent nerve paralysis which total from 3.5 per cent to 4 per cent irreparable bad results never seen with radioactive iodine. The incidence of hypothyroidism of 8.5 per cent for I-131, and from 5 per cent to 20 per cent for surgery, is probably nearly equal.

Two objections to I-131 are frequently raised by those who advocate surgical therapy. The first is longer morbidity in isotope therapy. However, let us analyze two situations and compare them.

Severe thyrotoxicosis, surgical therapy: preoperative preparation with thiouracil and iodine—roughly one day for every one per cent elevation in basal metabolism rate; average 57 days in Lahey's series.⁶² Postoperative hospitalization, 7 to 10 days; total days in hospital, 64 to 67.

Severe thyrotoxicosis, I-131 therapy: tracer study, one day; administration of therapeutic dose of I-131, one day; three day delay. Thiouracil and iodine given after treatment to induce remission equivalent to that prior to surgery—57 days. Total time in hospital—62 days.

Mild thyrotoxicosis, surgical therapy: 10 to 14 days Lugol's therapy prior to hospitalization; operation 3 to 5 days postoperative hospital stay; total hospital stay, 3 to 5 days.

Mild thyrotoxicosis, I-131 therapy: tracer dose, out patient; treatment dose, out patient; Lugol's started 3 days after I-131 treatment; total hospital stay—0.

In general it is safe to say that regardless of the degree of toxicity, a patient can be restored to health and activity by judicious use of I-131 followed by iodine as rapidly as by surgery.

The second objection to I-131 is its possible carcinogenic properties. The answer to this no one can predict; however, some idea can be obtained by observations on the late effect of x-ray on thyroid tissue. A survey⁶³ was conducted in which questionnaires were sent to 70 radiologists and 31 thyroid specialists in which these questions were asked:

1. Have you ever seen cancer arise in a thyroid gland treated by x-ray for hyperthyroidism? Was it nodular?

2. Have you seen cancer arise in adjacent structures?

3. Have you seen cancer arise in normal thyroid which was radiated because it fell in the field of adjacent malignancy?

4. Have you seen cancer arise in thyroid glands treated by means other than radiation?

Ten cases fitting question one were reported; but by analysis, only three could be considered since the time interval was too brief in the rest.

In response to question number two, eight cases of cancer of the skin due to radiation were reported, two cancers of the larynx occurred, and one each of the esophagus and trachea. The incidence of these conditions to that of the general population was not compared.

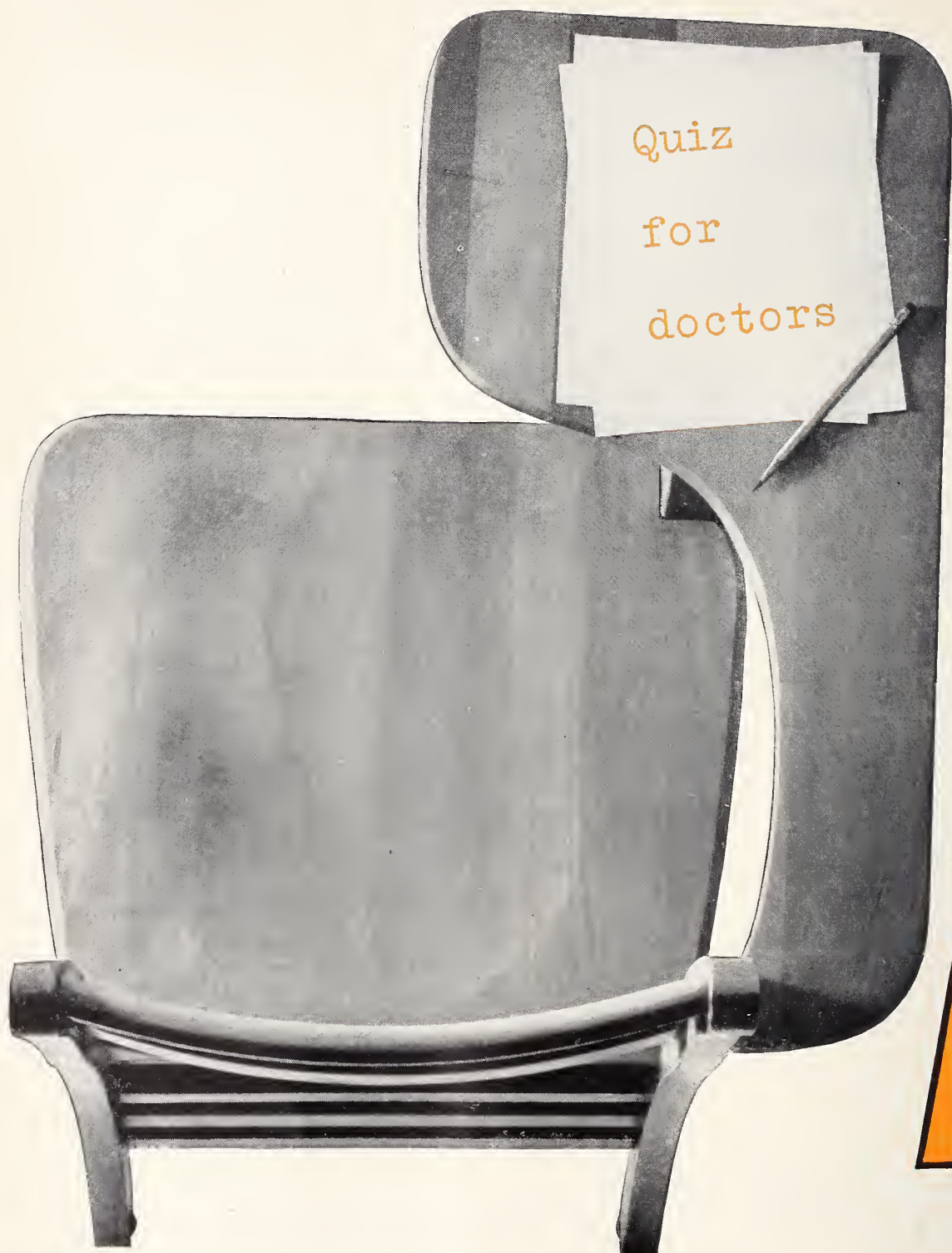
In answer to question three, no one reported having seen cancer arise in normal thyroid, though many radiologists said they must have given much larger doses in treating laryngeal carcinoma than was ever used in therapy of hyperthyroidism. Follow-up of many cases was over 10 years.

Nine cases of cancer arising in thyroid glands treated surgically were reported. While many were stated to be nodular goiters, two were reported specifically as diffuse toxic goiters.

The authors conclude the possibility of late malignant degeneration following radiation is negligible, and it may be presumed it is not appreciably greater in radioactive iodine therapy.

In summary, then, morbidity is the same in both methods, the cure rate is slightly higher in surgery; however, surgery has about 3 per cent irreparable complications never seen with I-131. Against a possible carcinogenic factor in I-131, which has not been established, one must weigh the irreducible 0.2 per cent to 1 per cent mortality of any surgical procedure. The occurrence of post treatment hypothyroidism is probably the same in both methods.

Quiz
for
doctors



A

you probably know every answer!)

Q. Which is today's most widely prescribed broad-spectrum antibiotic?

A. ACHROMYCIN — it's first by many thousands of prescriptions.

Q. What are some of the advantages of ACHROMYCIN?

A. Wide spectrum of effectiveness.
Rapid diffusion and penetration.
Negligible side effects.

Q. Exactly how broad is the spectrum of ACHROMYCIN?

A. It has proved effective against a wide variety of infections, caused by Gram-positive and Gram-negative bacteria, rickettsia, and certain viruses and protozoa.

Q. In what way are ACHROMYCIN Capsules advantageous?

A. For rapid and complete absorption they are dry-filled, sealed capsules (a Lederle exclusive!) No oils, no paste...tamperproof.

Q. Who makes ACHROMYCIN?

A. It is produced — every gram — under rigid quality control in Lederle's own laboratories and is available only under the Lederle label

ACHROMYCIN*

Hydrochloride
Tetracycline HCl Lederle



LEDERLE LABORATORIES DIVISION *AMERICAN Cyanamid company* PEARL RIVER, NEW YORK

*REG. U.S. PAT. OFF.

Recent reports concerning functional and histologic effects of therapeutic doses of I-131 on the thyroid gland of man have been reported by two groups of investigators. The first group⁶⁴ reported results on 29 cases in which evaluations were made between two days and eight years following administration of I-131. Results are as follows:

1. Difficulties were encountered in separating lesions due to radiation from those occurring from other causes.

2. Oral doses below 7 millicuries produced changes which were not recognized as due to radiation.

3. Oral doses 15 millicuries and above showed changes which were consistent with radiation effects (severe fibrosis).

4. Frequent findings were those of bizarre hyperchromatic thyroid epithelial cells regarded as exhausted or over stimulated non-functioning thyroid cells. These observations were found as frequently in non-irradiated thyroid glands with disease processes.

The results of the second group of investigators⁶⁵ on 23 patients with hyperthyroidism are as follows:

1. Twenty-one out of 23 became euthyroid following I-131 therapy.

2. Seven patients had glands which were predominantly hyperplastic with no definite radiation effects noted.

3. Nine patients had lesions identical with those of Hashimoto thyroiditis. This represents one effect of internal radiation with I-131.

4. Four glands contained multinodules and showed moderate follicular atrophy of the residual glandular tissue as a result of injury by ionizing radiation.

5. Three glands showed diffuse follicular atrophy with extensive fibrosis regarded as classical lesions of I-131 therapy.

6. Vascular disease in three glands was minimal and had no relation to the regressive thyroid lesions observed.

The results of these investigations present the difficulties involved in an attempt to verify or rule out the cancerogenic factor in I-131 radiation on a histological basis at this time.

SUMMARY AND CONCLUSIONS

1. Radioactive iodine is a highly sensitive tool for the study of various thyroid states and of over-all body iodine metabolism.

2. Radioactive iodine is the therapy of choice in any case of hyperthyroidism in which surgery is contraindicated.

3. If 100 microcuries of radioiodine per gram of thyroid tissue is given in cases of diffuse toxic goiter, 75 per cent of all treated cases will be made euthyroid. Second or third doses will give 91 per cent

cures, 6 per cent improved, and 3 per cent failures. The above results indicate that a more effective means of controlling therapy is desired. This can be obtained by employing a paper chromatographic method which is based on the initial changes in the iodinated plasma components which have been correlated with the clinical course in previously treated cases.

4. The amount of I-131 required to bring about remission in cases of toxic nodular goiter is much greater than in diffuse toxic goiter. There is also some question as to whether toxic nodular goiter should be treated with I-131 due to the incidence of malignancy associated with nodular thyroids. It seems logical that one should not treat a gland with I-131 in which its pathology is uncertain. The only treatment in this case should be surgical, especially when there is a possibility of malignancy.

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We will endure . . . if we accept our obligation to maintain stability in our world by conserving the traditions and institutions of the past and encouraging the orderly forces of progress. Those of us who assume that the capitalist society can and must endure rally around these standards. We believe in property but know it can flourish only when innovation has free rein and new enterprises (with the personal rewards that must go with them) can emerge. We are devoted to the idea of equality . . . of opportunity to rise. We are committed to the idea of man's rationality and his ability to make free choices for his own betterment and that of society.

—Louis M. Hacker

A Medical Student Looks at Blue Shield

William Kent Murphy

Galveston, Texas

To me, as a medical student, the problems to be faced as a practitioner are not immediate ones—but they will be! Coming, as I do, from a home of moderate circumstances, the expenses of medical care are of paramount importance to me as a matter of principle and to myself and my future patients as a matter of economics.

It is with this in mind that I take a look at Blue Shield and what it represents to me and my patients-to-be. I have often pondered the problem of medical economics, and before I understood more about the subject, I was quite a heretic from the standpoint of the medical profession. I could not see any solution to the burden of medical finances except Federal Compulsory Health Insurance!

For a moment, let us look at these expenses through the eyes of a person of low income. Let us consider what, to my family, and even more so to families of really low income, is the overwhelming problem of medical economics. People who have been reduced to poor circumstances are there often as a result of sickness and accidents. To people who have no "margin" to take care of medical bills, prolonged sickness looms as one of the most dreaded eventualities which can occur. As a result, they often ignore the obvious danger signals of insidious and crippling illnesses in the hope that such symptoms will "go away"!

If the breadwinner of a family, who can barely make ends meet, is stricken with illness, the tragedy is multiplied. It does not take a long illness for the head of a household to find himself permanently behind the eight-ball financially. Medicine is expensive, hospital care higher, and in addition there is the expense for the doctor without whom the other expenses would be futile. Operations, prolonged bed rest, expensive treatment by specialists, all the marks of adequate medical care, can represent to the person of moderate income a tremendous obstacle. Since bad things seem to come in three's, physical recovery for the wage-earner may mean nothing but a return to work for years to pay for bills of his sickness and that of his family.

To me, as a person who has seen some of the results of such bouts of illness, as who of us has not, the problem is in sharp focus. Maybe this among the many challenges of medical practice rates as one of

the primary reasons for my coming to medical school—to be of genuine help to people in their illness. This was the reasoning by which I considered federal health aid a necessity to the welfare of the many. It does not take long, however, to realize that good intentions do not remedy bad situations.

As a medical student, it is not hard for me to see why doctors violently oppose federal intervention in medicine, and as an American, I can feel the pride of my chosen profession in its achievements and progress, the vital enemy of which is regimentation under any guise.

What then of the welfare of the masses of people to whom medical care can be a tremendous burden? I shall not say that the answer has been found completely, but there is at least hope for a future, free from federal control, when doctors will be free to help people in their sickness and trouble without their services becoming a financial burden to their patients.

What is this glimmer of hope? It is the cooperative spirit and farsightedness of a few of the medical leaders who, as long ago as 1939, envisioned a voluntary health insurance program. At that time the medical profession began to work out its answer in a concrete way to the problem of the expensiveness of medical and surgical care—Blue Shield.

A discriminating person will not accept what he hears and reads at face value, but will delve into things that interest him with an eye toward discovering the values and defects of those certain things. An evaluation of Blue Shield is no exception. Insurance is no new thing in the field of American business, so why should "another insurance plan" seem to light a path to future health for the people? What is it in Blue Shield that is particularly of interest to both the medical practitioner and to the public?

It is not the purpose of this discussion to go into the theory of insurance, nor to repeat what booklets long since prepared say much better. As a person who has just begun to explore this field, I would like to point out what I consider to be the important features of the Blue Shield Plan.

Let us look at it first from the standpoint of a young and eager doctor, to whom the welfare of his patients is of paramount importance. To such a person, high charges on the part of a doctor for medical care, when applied to people of low income, seem incongruous, and they are! Medical care, however, is expensive, and for that there is no cure. If then,

This essay won third prize in a national contest sponsored by Blue Shield and the Student American Medical Association. Mr. Murphy is a student at the University of Texas School of Medicine.

there were some plan of paying for care during sickness before it is necessary—!

We are all familiar with commercial health insurance. I am sure more than a few people have felt the sting of a misplaced confidence in such insurance. This is not to say, however, that there are not good insurance policies of the commercial variety, because there definitely are.

Blue Shield represents, on the other hand, a plan which can well merit the confidence of its purchasers. No plan for helping alleviate the ticklish problem of medical economics could survive without the help of both the medical profession and the people as a whole. Blue Shield represents a start toward the goal of affording to people the benefits of prepaid insurance against medical bills. More than that, it represents the beginning of an intelligent response on the part of physicians toward the problem that threatens their existence as a free system under the American tradition of free enterprise.

No one can understand medicine better than those people who make up the nucleus of medical science, the physicians in practice. It is only logical, then, that they be the ones who institute a method for voluntary health insurance. Not only that, but it is their responsibility to see that efforts are made on the part of the profession to cut down overcharging and excess extra fees. What better assurance against this is there than a plan whereby doctors cooperate to help cut medical costs! In this respect Blue Shield represents a step in the direction of correcting some of the problems intraprofessionally, as well as those with the general public.

Another important point in favor of Blue Shield is the fact that it is a non-profit organization. Most insurance companies are run for a profit, which is logical enough. It is well known, however, that the "middle man" often raises costs greatly. In the Blue Shield plan for pre-insurance, the method for allaying some of the costs of medical expenses does away with a profit-making intermediary, something which potentially could lower costs of medical insurance greatly. This is not to say that commercial insurance is taboo, but for people who can barely afford any insurance, one which deals directly with the source of expenses is far more economical than an indirect dealing. Blue Shield does, in effect, eliminate the expense of a middle-man, since it is a non-profit organization.

Among the other important points to be considered in setting up an idealized system for medical and surgical insurance is that of adaptability of a plan to local needs. Here again Blue Shield has the edge on nationally run plans in that individual plans are set up by doctors in the areas to be served and can be tailored more or less to fit the economic status of the section involved.

To turn the mirror around, let us look at the benefits to be derived from Blue Shield by the people for whom it is intended. To begin with, the original plans were set up to cater to people of low income brackets; they were set up to make some type of health insurance available to the people which would give them real benefit without "skinning" them in the process. Blue Shield represents a concrete means of paying the doctor as the grocer is paid, day to day and week to week. Thus medical and surgical bills may be defrayed before they are incurred, and in small amounts.

Blue Shield offers to the people a plan backed by the people who are going to be most concerned with it, other than the sick patient, namely the doctor. This plan is a dependable plan and can be entered into at low cost, relatively speaking, without the fear that the insurance thus bought will be useless when it is needed, as is so often the case with insurance not backed by so reputable an organization as the American Medical Association.

All this seems far afield from the theme of this paper, but it represents concretely the view of one medical student as he looks at Blue Shield. Anyone who looks at an item looks at all of it before he passes judgment on it. Therefore, I have tried to look at Blue Shield from my former standpoint, my present position, and my future point of view.

Blue Shield represents to me a plan which, if my patients possess it, will enable me to give them the kind of care they need physically without defeating my purpose by burdening them with health-breaking bills. It is well known that part of treating illness involves the culture of a good psychological state of mind. It is hard to see how such a state could be obtained if the patient were constantly worrying (for good reason) about finances.

Blue Shield represents also the seed from which can grow the plan whereby the American medical profession can save itself from the often seemingly inevitable folly of national regimentation. Anyone who has been subjected to an indifferent health service knows that the best care comes, not from those who are forced to serve you, but from those whom you choose to serve you! There is no inspiration to a person greater than that of the confidence of his fellowman. Blue Shield allows patients free choice of doctors and at the same time does not attempt to set fees or place undue restraint upon the doctor. It does, however, place a certain moral obligation upon the doctor to be fair. Thus when a patient chooses a physician and places in him his confidence, that physician is bound by all that he is to try to merit that confidence.

No discussion is complete without criticism. Thus it is necessary to point out problems and weaknesses, as I see them, which appear in a plan such as Blue

Shield. To begin with, this plan must be supported wholeheartedly by the medical profession if it is to survive. Half-way support just will not do the trick! When specialization is the order of the day in the medical field, and when fees skyrocket, only an alert profession can save itself from serious trouble. A doctor cannot forget the economic effects of sickness and disability upon his patients.

It is impossible for me to envision a profession dedicated to the physical welfare of mankind only, one which tries to isolate the physical being from the economic and psychological being. The man a doctor treats is "whole" and is not composed of disarticulated parts to be treated individually without regard to the whole. Blue Shield then represents a concrete beginning for keeping man economically well through sickness and health, but it is only a beginning. This plan must grow and be revised continually as dictated by experience and intelligent consideration.

The ideals of preventive medicine and high public health standards cannot be realized as long as people are unable to pay for preventive and diagnostic measures. Cancer, as an example, will never be controlled as long as diagnosis is as tedious and expensive as it is. Here the genius of medical science will help solve the problem, but no pre-insurance plan should be considered complete as long as it leaves untouched these problems which are pertinent to the health and welfare of the people. Wise heads say diagnostic and preventive measures cannot fall within the realm of pre-insurance, such measures not being financially

feasible. This position must be re-examined thoroughly before such a conclusion is taken as final.

Blue Shield is obviously alive and awake to the problems to be faced before the enigma of medical economics is solved. The recent addition of "catastrophe" insurance is definitely a step in the right direction. No problem is greater than that of prolonged illness which requires expensive medical and surgical care as well as rehabilitation measures. As a medical student looks at Blue Shield, he sees plainly the challenge before him. Wise heads preceding him have given genesis to this plan which promises to be medicine's answer to health insurance.

The public, however, will continue to clamor for health insurance as long as it does not see or know about that which is plainly available to it. It is up to the doctor and to the prospective doctor to become acquainted with and acquaint others with the possibilities of Blue Shield. In the medical students of today are the minds which will give birth to the ideas for the future course of Blue Shield. Until it has fulfilled the need for public health insurance, Blue Shield will need revision.

It is worth the time of every medical student to acquaint himself with this plan before he is faced with the actual necessity of utilizing it in practice to the best advantage of his patient. As this medical student looks at Blue Shield, he feels the conviction that it represents a concrete beginning of the solution to the problems of national regimentation of the medical profession and of medical economics.

420 Market Street
Galveston, Texas

Aside from diagnostic ability and essential kindness, there is probably no quality in a physician for which patients are so grateful as the ability and desire to explain, to answer their anxious questions fully and truthfully, to be as frank as knowledge will permit. From personal experience I know what unhappiness can result from failure to explain; I know also that few things in medical practice bring such deep satisfaction to doctor and patient as frankness.

H. M. Marvin, President
Connecticut State Medical Society



Every former student of Dr. Ernest Sachs invariably has most vivid recollections of his "Thursday Clinics," remembering them as terrifying experiences at the time (especially if he was "in the pit"), yet the source of facts, principles, and examination techniques which have never been forgotten since that memorable day of his junior year in medical school. In answer to numerous requests, Dr. Sachs recently published a group of his essays in a small book.* They make interesting and instructive reading, and will be of particular interest to those who attended his "Thursday Clinics" for a year. Some excerpts from "The Case That Has Been Unrecognized and Is Diagnosed Too Late" are characteristic.

"All of us have seen cases that have been unrecognized and in which the diagnosis has been made too late to help. This is one of the most trying experiences that a physician has to encounter. Probably no one ever handled such a situation with greater tact than William Osler, and he undoubtedly came across such instances innumerable times, for doctors and laymen from all over the United States consulted him when all else had failed.

"What should be the attitude of the physician towards his colleague when this happens? . . . Criticism of our colleagues accomplishes nothing and creates only hard feelings. We must exercise tolerance and keep in mind always that none of us is infallible, and that some of us have had greater advantages than others. These unfortunate occurrences can be obviated in the future only by proper instruction. It devolves upon every one of us who has had these advantages to give our less fortunate colleagues the benefit of our experience. The first requirement is to insist on a careful study of every patient. In the vast majority of in-

stances, a detailed history and physical examination, carried out by a thoughtful physician, will give him a clue to his patient's trouble.

"Errors in diagnosis are most likely to occur in diseases that have an insidious onset and in which the patient's initial symptoms are vague and indefinite. Frequently, such patients do not receive the careful attention they deserve, and the diagnosis is missed because a thorough, complete examination has not been made.

"Every patient who comes to a physician, irrespective of how trivial his symptoms seem to be, should have a careful history and a complete physical examination. This seems obvious, but we all recall instances in which obvious points in examination have been overlooked or disregarded. . . ."

"All medical teachers should impress upon their students that they should never be too proud to call for help. The time has passed when one man can hope to know every phase of medicine. He should be frank to recognize this fact and not hesitate to tell the patient that another doctor can handle this particular problem better. There was a time, not so long ago, when in some communities it was considered a disgrace and reflection on a physician's ability if he asked for a consultation. Fortunately, that time has passed, and I doubt if there is any town or village today where the necessity and wisdom of a consultation is not recognized.

"A grave responsibility, however, rests upon the consultant because his attitude towards his colleague, while it might be of great help, could also do untold harm. If he does not handle the situation tactfully, he may harm not only himself but, far more important, create a distrust of his colleague which could ruin his practice. Especially where there are very few physicians in the community, it may cause much unnecessary unhappiness. Tolerance and consideration on the part of the consultant should always be his guiding principles."—(O.R.C.)

* Reprinted from *Pre-requisites of Good Teaching and Other Essays* by Ernest Sachs, The Shoe String Press, 51 Caroline Street, Hamden, Connecticut, 1934, by permission of the publishers.

PRESIDENT'S PAGE

DEAR DOCTOR:

The marathon endurance test is on. Since my last letter to you, I have done my best to represent you at the following meetings: the Pediatrics Training Program Panel at the medical center in Kansas City, the School Health Postgraduate Panel at K.U.M.C., Kansas City, the Kansas Trudeau Society and Kansas Tuberculosis and Health Association meeting in Topeka, the meeting of the Council of the Kansas Medical Society, the Kansas University Alumni Association annual meeting in Kansas City, the Golden Belt Medical Society gathering at Concordia, the annual meeting of the Menninger Foundation in Topeka, and the Northwest Kansas Medical Society meeting at Colby.

Our Oliver Ebel, executive secretary, is now out of his cast for a fractured fibula and is making a good recovery from a cholecystectomy. He is back on the job in full strength. Our executive assistant, Rueben Dalbec, did a yeoman's job during Oliver's illness. He deserves much vitamin P for his efforts. Vitamin P is the *praise* vitamin. Let us not forget to administer this P vitamin often and repeatedly, not only in our practice but also in our associations with the allied professions.

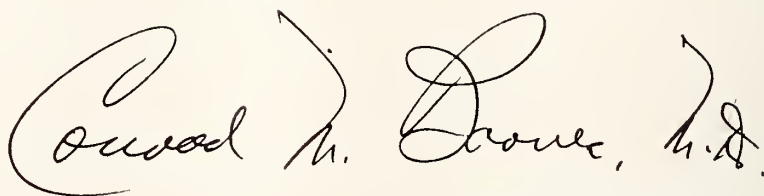
One of our big and important "hurdles" this year is the \$25,000 we Kansas physicians need to contribute to the A.M.E.F. We do not desire more socialization and federal aid. Therefore, we must do our part to help raise the \$10,000,000 needed to maintain the present high standards of our medical schools in this country.

Dr. Cyril V. Black, chairman of our Committee on Endowment, tells me that each Kansas physician must contribute at least \$15 or more in order for us to meet our quota. All such contributions to the A.M.E.F. are tax deductible. Remember to send "In Memoriam" contributions to the A.M.E.F. instead of, or in addition to, flowers for the funerals of friends and departed loved ones. In spite of the fact that we have the largest medical school in the world here in Kansas, we Kansas physicians carelessly neglected to contribute our share to the A.M.E.F. last year. Let us do better this year!

All contributions to the John Porter Memorial Fund will receive credit in the A.M.E.F. and will, at the same time, maintain their identity in the John Porter Memorial Fund. This would be an excellent time to make your contribution! Ask your Councilor for further details as he will have a special doctor appointee in each county for the collection of A.M.E.F. contributions this year. I hope to be able to report on the progress of the Porter Memorial Fund when next I write.

In closing my letter for this month, I'd like to ask a favor of you. Please be a one-man public relations committee for doctors of medicine as you practice our science and art. You are proud of that M.D. degree. "Win Friends and Influence People" in its name . . . and remember about vitamin P!

Sincerely, in the Practice of the Art,

A handwritten signature in cursive script that reads "Conrad M. Barnes, M.D." The signature is fluid and elegant, with a large initial 'C' and a long, sweeping underline.

CONRAD M. BARNES, M.D.

EDITORIAL COMMENT

FEDERAL LEGISLATION

The A.M.A. Committee on Legislation held a regional legislative conference in Omaha on October 15, 1955. Representatives of 11 midwestern states were present, including several Kansas doctors.

Those who were at Omaha can see the need for a united effort on the part of the medical profession if medicine is to continue without federal assistance and ultimate complete federal control.

During the 83rd Congress some 300 bills directly affecting the practice of medicine were introduced. All but two of the United States senators signed their names to one or more of these health measures. This is pointed out to emphasize the popularity of health programs at the federal level and the weakening of public opinion in regard to a federal health program. Aside from this, it points to even more drastic action by Congress in the 84th session because of the election year.

The President's health reinsurance program which was defeated during the last session will undoubtedly be re-introduced. We will once again rely on the Democrats to defeat this measure. Even here one wonders if the vote is one of principle and understanding of the bill or the customary "No" vote on administration policy. Help from the Republican Party was and is needed, but it is interesting to note the party which defeated the bill during the last session.

It is most difficult to see who could benefit by health reinsurance. The insurance companies say there is little demand and believe there would not be much usage of such moneys. Private insurance companies have made incomparable strides during the past several years in bringing health insurance to the people. This bill is not designed to help those who do not have insurance, so its intent is not clearly understood by anyone. Yet medicine can look forward to a great deal of effort upon the part of the administration for the passage of this \$25 million reinsurance bill in 1956.

The A.M.A. policy on veterans' affairs remains unchanged. The A.M.A. favors and actively supports legislation whereby the federal government provides care for these veterans whose disability was service connected or aggravated. On the other hand, they strenuously object to medical care provided for the veteran with no service connected disability. Yet in spite of A.M.A. objections, more than 1,000,000 additional veterans are becoming eligible for free medical care each year, and 85 per cent of

those in veterans' hospitals in 1954 were veterans with non-service connected disabilities.

More than 30 separate bills on polio vaccine were introduced within a three-month period after the announcement from Ann Arbor revealing the success of the initial mass immunization program. A sum of \$420,000 was allotted to Kansas alone to provide for vaccine and administration of an immunization program. This money must be spent by February 1956. Is this a precedent being set by the federal government for all future immunization programs, or was such legislation passed to control the vaccine until the supply reaches the demand?

Federal aid to education, compulsory disability coverage under the Social Security Act, tax deferred retirement plans, treaty power, etc., combined with federal legislation before mentioned, will play an intricate part in the future of the medical profession when Congress reconvenes in 1956.

It behooves every state and county medical society—yes, every physician—to support the A.M.A. in its endeavor to pass legislation which benefits the public or to reject such bills which have no apparent advantage. It is equally important for the A.M.A. to send information about proposed legislation to state and county component groups so that the individual physician has an opportunity to know what is being considered in Washington.

FEDERAL AID PROGRAMS

Several years ago the JOURNAL carried a series of articles describing the various Kansas programs which were aided by federal appropriations. A new report on federal aid offers material for reflection, so without comment on any phase of this subject here are a few facts supplied by the American Medical Association Washington office.

The federal government is interested in many health programs administered by some 20 separate bureaus including the Children's Bureau, the United States Public Health Service, the Veterans Administration, the Department of Defense, and the Treasury Department. Some programs are operated from the national level and others by the states with federal money. Details of any program will be supplied upon request, but this story is a more general one.

In the fiscal year ending June 30, 1954, the federal government appropriated \$1,775,882,197 for health projects. In 1955 this figure was \$2,131,820,372. For this fiscal year ending June 30, 1956, health appropriations are \$2,268,826,576. So in the last three years this item of federal expense has risen by almost \$500 million!

Health, Education, and Welfare, the Defense De-

partment, and the Veterans Administration will each spend more than a half billion dollars on health this year. The total of two and one-quarter billion dollars is of some consequence even in a multi-billion dollar budget.

For instance, the health figure is 15 times the amount needed to maintain Congress and the federal courts. It is 14 times the budget of the State Department and is four times more than is spent either by the Labor Department or the Post Office Department.

The federal government now buys 15 per cent of all the health service in the nation. In other words, for every dollar public and private health expense, including tooth paste and cancer research, the federal government pays 15 cents.

This also reflects in the Kansas health picture. The health figure for federal grants to Kansas for 1955-1956 is not immediately available, but a somewhat more inclusive figure is. In 1945 Kansas received about \$10 million federal aid for all purposes, health as well as welfare, education, highways, etc. In 1954 this was more than \$40 million. Incidentally, the total Kansas budget in 1945 was \$60 million, which rose in 1954 to \$218. Last year another \$6.5 million was added, and the end is not yet in sight.

ON PUBLIC VIEW

Doctors as a group receive the confidence and respect of the public, according to a report issued recently by the Los Angeles County Medical Association on completion of a public opinion survey conducted over a period of three months. The finding differs sharply from results of other recent opinion samplings in scattered areas of the nation which indicated widespread "public hostility" toward the medical profession.

There is no reason to suppose that Kansans would subscribe to the opinions expressed in California. Neither is there reason to believe that residents of this state are as dissatisfied with their doctors as are those who were queried in other localities. At any rate, a study of the Los Angeles survey may serve to enlighten the physician here on areas in which misunderstanding often exists.

In conducting the study the John B. Knight Company of Los Angeles interviewed 360 adults. An "influence" group of 51 persons was selected arbitrarily to represent as nearly as possible a cross section of those persons whose position put them into a category of leadership. There were 309 in the group representing the "general public."

Thirty-eight phases were covered in the survey report. Included here are only those items which seem to be of particular interest in Kansas.

Surprisingly, 75.1 per cent had a regular or family doctor.

Persons who felt that their physicians had given them all the information they wished about their illnesses made up 91 per cent of the group.

The doctor's attitude was approved by 85.5 per cent as "kindly, sympathetic." Approval of the amount of time spent on diagnosis and treatment was voiced by 95.2 per cent. Only 15 per cent reported having called a physician who couldn't take the case, and 61.3 per cent of those felt that the doctor was doing his best but was too busy. In selecting a doctor 64.2 per cent reported that they rely on the recommendations of a friend, and 2.5 per cent had called the county medical society for referral. More than half had changed physicians because of dissatisfaction. Reasons, in the order of their frequency, were: "Not thorough," "Didn't like his medication," "Not a specialist," "He charged too much."

How many believed that an osteopath is a medical doctor who has specialized? The answer is 77.5 per cent. And 83 per cent confused internists with interns. Confidence that a doctor would not undertake procedures for which he is not qualified was expressed by 86.5 per cent, another 6.3 per cent had doubts, and 7.1 per cent had no opinion. The public generally was of the opinion that "all" doctors were more competent to diagnose different diseases than to perform different surgical procedures.

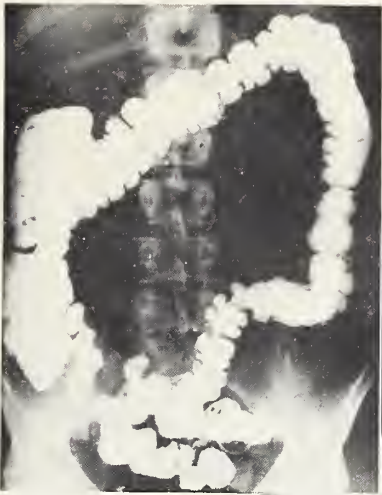
Most were lenient about waiting for the doctor to keep appointments, 82.8 per cent feeling delay is justified and 10.5 per cent finding delays "unreasonable." Emergencies were cited as the reason for the doctor's delay by 44.5 per cent of those queried, but 20.9 per cent felt that appointments were scheduled too closely together.

The following figures reflect opinions on economics: 88.0 per cent were entirely satisfied with physicians' fees; 30.2 per cent felt that medical fees "generally" are unreasonable; 22.1 per cent thought they knew of people who needed medical treatment who weren't receiving it because doctors' fees are too high. Among community leaders 48 per cent had the latter opinion. The most frequently suggested causes for physicians' expenses were equipment, tools, utilities, and rent, in spite of the fact that 74.8 per cent thought the doctor's professional education required eight or more years.

The public guess on physician income, reduced to a median, was \$17,581. A little more than 63 per cent thought that the doctor's income, whatever it is, is "about right," 7.3 per cent thought it too low, and 12.2 per cent had no opinion. More than 80 per cent would expect to find two cars in a doctor's garage.

Questions about insurance revealed that 74.3 per cent were more interested in having coverage for

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hospital bills than for doctors' fees; 59.8 per cent preferred "service type" insurance; 28.8 per cent wanted "indemnity," and 7.4 per cent like "closed panel" coverage. Compulsory health insurance would not be favored by 82.1 per cent, that figure rising to 91.5 in the "influence" group.

Questions that reflect opinion on matters of ethics disclosed that 66 per cent consider fee splitting wrong and 20.5 per cent approve. The belief that doctors send patients to particular pharmacies was held by 50.2 per cent, and 33.9 per cent think the physician receives a "rebate" from the pharmacy.

The medical society in Los Angeles listed 13 objectives when it undertook the survey. It appears that the information obtained will be valuable to that group in planning future public relations programs and is of interest to all who practice the art as well as the science of medicine.

RESIGNS FROM EDITORIAL BOARD

Dr. Glen R. Shepherd, Kansas City, who has been an associate editor of the JOURNAL since 1949, resigned that position last month when he announced that he had accepted an appointment as assistant secretary of the Council on Medical Education and Hospitals of the American Medical Association.

In addition to serving as assistant to the dean at the University of Kansas School of Medicine during recent years, Dr. Shepherd has been assistant professor of medicine at the school, has written a nationally syndicated newspaper column, "Doctor's Notebook," and has contributed countless hours to the work he did for the JOURNAL. That has included assembling scientific material for the annual University of Kansas School of Medicine issue, editing clinicopathological conferences, and serving as liaison between the school and the publication.

The newly created position Dr. Shepherd has accepted with the A.M.A. has the specific assignment of spearheading further studies in the area of postgraduate medical education, reviewing and analyzing what is currently being done in all parts of the country in postgraduate medical education, and eventually recommending to the council ways in which it can be most helpful to physicians. Members of the Kansas Medical Society, and particularly those on the Editorial Board who have worked with Doctor Shepherd, wish him well in his new undertaking.

Dr. Vernon E. Wilson, assistant dean in charge of student affairs at the medical school, has accepted the responsibility of serving as associate editor of the JOURNAL. He is now working with the Editorial Board on plans for future issues. Dr. Jesse D. Rising will edit clinicopathological conferences published after December, 1955.

ACTIVITIES OF MEMBERS

Dr. William C. Menninger, Topeka, was recipient of the 1955 honor award given by the Mississippi Valley Medical Society at its meeting in St. Louis last month. The award is reserved for non-members of the society "who have made distinguished contributions to clinical medicine."

Dr. Dale Peters, Wichita, was speaker at a recent meeting of the South Central Association of Social Workers. The meeting was held in Wichita.

Dr. Spencer Bayles, who has been assistant professor of medicine and of psychiatry at the University of Kansas Medical Center, is leaving this month to join the psychiatry faculty of Baylor University School of Medicine, Houston.

Dr. John C. Mitchell, Salina, has accepted appointment as a member of the Board of Education there to fill an unexpired term.

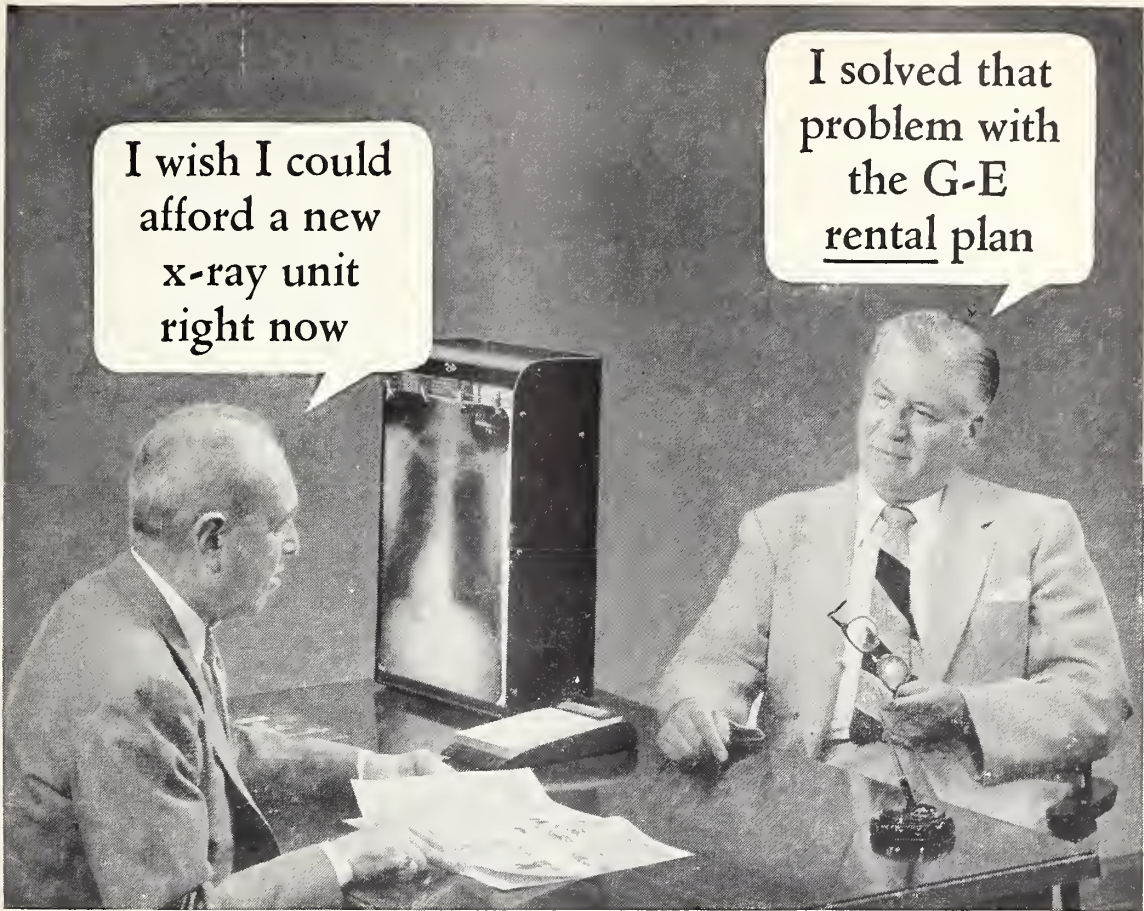
Dr. Karl E. Voldeng, Wellington, was guest speaker at a meeting of the Belle Plaine Parent-Teacher Association on October 10. He discussed the health of the school child.

A feature story about Dr. John L. Lattimore, Topeka, and the Lattimore-Fink Laboratories was published in the October 9 issue of the *Topeka Daily Capital*.

Dr. Eldred V. Thiehoff, of the University of Kansas Medical Center, has been made a fellow of the newly established American College of Preventive Medicine. He is also chairman of the committee on local arrangements for a November meeting of the Association of Teachers of Preventive Medicine.

Dr. C. R. Rombold, Wichita, addressed members of the Southwestern Bar Association at a meeting held at Hutchinson recently. He discussed disability evaluation.

Dr. Charles C. Gilkey has announced that he will devote full time to practice in Perry after January 1. At present he is under contract at the Santa Fe Hospital, Topeka, for half-day service.



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Dr. Harry Last, Leon, was the subject of a feature story in the *Leon News* on September 22.

Dr. J. Cotter Hirschberg, of the Menninger Foundation, Topeka, and Dr. Mary T. D. Glassen, Phillipsburg, took part in a joint meeting held in Salina recently by the Kansas Family Life Association, the Kansas Association for Mental Health, and the Kansas Council for Children and Youth.

Dr. Richard L. Merkel, Topeka, and Dr. M. D. McComas, Concordia, became fellows of the International College of Surgeons at a meeting held recently in Philadelphia.

Dr. Hansel D. Benvenuti, formerly of Wichita, has announced opening of an office in Huntington Park, California.

Dr. William L. Valk, of the University of Kansas Medical Center, participated in a panel on geriatrics at a recent meeting of the Mississippi Valley Medical Society in St. Louis.

Dr. David R. Davis, Emporia, discussed Salk vaccine at a recent meeting of the Outlook Club in Emporia.

An issue of the *Kansas City Star* last month carried a story about Dr. Paul W. Schafer and a recent study he made of medical facilities in Russia. Dr. Schafer, formerly at the University of Kansas Medical Center, is now a major in the medical corps of the Army.

Dr. John B. Dixon, Parsons, recently became a diplomate of the American Board of Ophthalmology.

Dr. Clarence W. Erickson, Pittsburg, immediate past president of the Kansas Heart Association, was recently appointed to the Board of Directors of the American Heart Association for a three-year term.

Dr. Lloyd W. Hatton, Salina, was guest speaker at a recent meeting of the Saline County Medical Assistants' Society. His address was on the subject of mental hygiene.

Dr. Harold M. Glover, who has been associated with the Axtell Clinic in Newton since 1916, recently announced his retirement from active practice. Members of the staff and employees of the clinic and of

Axtell Christian Hospital and their families were present at a picnic in Dr. Glover's honor on October 11.

Dr. Cyril V. Black, Pratt, discussed the use of narcotics at a recent meeting of the Woman's Auxiliary to the Pratt County Medical Society.

Dr. G. Loren Norris, Winfield, president, and Dr. D. R. Bedford, Topeka, president-elect of the Kansas Heart Association, were delegates to the annual assembly of the American Heart Association held in New Orleans, October 21-26.

COUNTY SOCIETIES

Dr. Harry Statland, associate in medicine at the University of Kansas Medical Center and author of a recently published book on fluids, addressed the Shawnee County Medical Society at a meeting held in Topeka on October 3. His subject was "Syndromes of Fluid Imbalance—Recognition and Treatment."

Dr. William L. Warriner, 93-year-old physician who was the subject of a feature story in a recent issue of *Coronet*, was given a standing ovation.

A meeting of the Central Kansas Medical Society was held at the country club in Ellsworth on September 15. Members of the Auxiliary were guests of the Society at dinner.

Members of the Cloud County Society were hosts to the Golden Belt Medical Society at a meeting held at the country club in Concordia on October 13. Dr. Frank F. Allbritten, Jr., of the University of

DEATH NOTICES

CHASE B. JOHNSON, M.D.

Dr. C. B. Johnson, 64, a Lawrence physician who was an active member of the Douglas County Medical Society, died at Lawrence Memorial Hospital on October 7 after a short illness. A graduate of Northwestern University Medical School in 1921, Dr. Johnson came to Kansas in 1922 and opened an office in Eudora. He remained there until 1946 when he began practice in Lawrence.

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Kansas Medical Center, spoke on "The Surgical Treatment of Acquired Heart Disease." A panel discussion on diabetes was presented by Dr. Neil Jenkins, Salina; Dr. Robert H. O'Neil, Topeka; Dr. Edward J. Ryan, Emporia, and Dr. Henry Stryker, Jr., Concordia.

A meeting of the Northwest Kansas Medical Society was held at Colby on September 28. The subject for discussion was distribution and administration of Salk vaccine.

Dr. George J. Thomas, chairman of the Section on Anesthesiology at the University of Pittsburgh, was speaker at a meeting of the Sedgwick County Medical Society held in Wichita on October 4. His subject was "Safeguards Against Explosions of Anesthetic Agents."

A meeting of the Tri-County Medical Society was held in Harper on September 21. Dr. Katherine Pennington, Wichita, spoke on "Pediatric Cardiology."

A meeting of the Wyandotte County Society was held at the Town House Hotel, Kansas City, on October 18. A movie, "Kidney Function in Health," was followed by discussion.

Dr. M. M. Tinterow, Wichita, was speaker at the September meeting of the Butler County Society in El Dorado. His subject was "What's New in Anesthesiology."

FOUNDATION ASSISTS IN OFFICE FINANCING

The Sears-Roebuck Foundation, in cooperation with the American Medical Association, has announced a new plan for assistance in establishing medical practice units with loans of up to \$25,000. The unsecured, low cost, 10-year loans will be available to physicians seeking to establish new practices but unable to arrange full local financing. A grant of \$125,000 is available to begin the program.

The plan requires that the physician first exhaust all local possibilities for financing, that his application indicate a need for a practice in the proposed locality and good possibilities for success and public service, and that he give evidence of effort and thought in planning a well organized, effective practice unit. As grants are repaid, the money turned back into the fund will be used for establishing further units.

The plan relies on individual initiative and enterprise, requires that assistance be given only where it

will generate independence, and is sustained entirely by those who benefit from it. Continuation of the plan after this year depends on its reception and support by the medical profession.

BOSTON CLINICAL SESSION

This year's American Medical Association clinical meeting in Boston, November 29 through December 2, is expected to be the largest ever held. The program, aimed at helping to solve the daily practice problems of the family physician, will probably attract some 4,000 physicians. About 200 scientific papers and exhibits have been scheduled for presentation.

Closed circuit television programs, originating in New England Deaconess Hospital, will bring live operations in color to the lecture hall. The program is being sponsored by Smith, Kline and French Laboratories.

More than 50 motion pictures will be shown during the session, and 150 technical exhibits will be displayed. Registrants at the meeting will receive tickets to a concert given by the Boston Symphony as a courtesy of Winthrop-Stearns, Inc.

GRANTS TOTAL \$100,723

Recent grants to the University of Kansas Medical Center make a total of \$100,723 available for research at the institution. The American Cancer Society has awarded \$32,100 for work under the supervision of Dr. Robert E. Stowell on "Physical, Chemical, Structural, and Functional Changes Associated with Cancer," and the Kansas Division of the American Cancer Society has added \$15,000. The National Cancer Institute has authorized a grant of \$18,101 for a project entitled "Histochemical Studies of Necrosis."

Two amounts were received from the U.S. Public Health Service. The first, \$25,000, is for a study on "Evaluation of Sera Diagnostic Tests for Cancer," to be supervised by Dr. Jack Hill and Dr. Stowell. The second, \$10,522, will be devoted to "Studies of Liver Function in Experimental Cirrhosis" conducted by Dr. Chauncey G. Bly.

The Kentucky State Medical Association's Veterans Committee advocates the presence of a physician at American Legion post meetings to create a better understanding of medical problems as they affect the veteran and the public. Since Legion policies regarding such problems originate at the local level, the profession as a whole would benefit if the Kentucky plan became universal.

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Panhypopituitarism: Problems of Etiologic Diagnosis and Therapy

Tumor Conference

Edited by Bernard Klionsky, M.D.

Dr. Allbritten: Today's case illustrates the difficulties of establishing an etiologic diagnosis and of determining proper therapy for a patient who has clinical evidence of panhypopituitarism.

Dr. Calkins: The patient is a 39-year-old man who for two years has complained of the gradual onset and progression of weakness, anorexia, nausea and vomiting, weight loss, loss of libido and of potency, intolerance to cold, and loss of body hair. Three months ago he sought medical attention; therapy with hydrocortisone and thyroid was instituted. One month ago he became too weak to continue work and sought hospitalization.

Physical examination revealed a chronically ill man who appeared in no acute distress and who showed evidence of weight loss. Blood pressure ranged from 80-120/60-80. Hair was absent from the chest and was scanty in the axillary and pubic areas and at the lateral border of the eyebrows. The skin was coarse and dry. His face was puffy, he talked slowly, and he appeared to be generally underactive. His testes were soft and atrophied and his prostate was small. Visual fields were normal.

Steroid and thyroid therapy were discontinued at the time of hospitalization. Initially the serum electrolyte pattern was normal. Within five days the serum sodium and chloride fell to 111 mEq/l and 87 mEq/l respectively; the patient felt markedly weaker and developed increased nausea and vomiting. Oral administration of sodium chloride was followed by clinical and subjective improvement.

His basal metabolic rate was -20. Protein bound iodine was normal at 4.7 gamma per cent, I^{131} uptake studies revealed 2 per cent uptake in 24 hours. Following the administration of 10 cc. of thyroid stimulating hormone (TSH) intramuscularly, the I^{131} uptake was increased to a normal level. This emphasizes the fact that his thyroid is capable of responding to pituitary stimulation. Administration of 25 mgms. of ACTH was followed by a drop in the circulating eosinophile count from 211 to 78/cu. mm. Seventeen ketosteroid excretion in 24 hours was 6 mg., which is below the limits of normal. The 11-oxysteroid excre-

tion was 0.7 mg., which is within the range of normal.

Dr. Allbritten: Are there pertinent radiologic findings?

Radiology resident: All our findings are negative. It was felt that the sella tursica was within normal limits of size. There were no erosions. Intravenous pyelograms and roentgenograms of the chest and sinuses were normal.

Dr. Allbritten: Dr. Delp, would you discuss this case?

Dr. Delp: For several years this patient has presented a problem to his physician, who felt correctly that he had an atypical adrenal cortical insufficiency. His tentative diagnosis was Addison's disease, but he wasn't satisfied and referred the patient for complete evaluation.

The patient states that his initial complaint, starting about three years ago, was that of loss of libido. One notices the thickness, puffiness, and lardaceous coloration of the patient's skin. One can't help but notice the complete absence of hair on his face. He tells you that he shaves now only once a week. His hair, rather than being coarse, is extremely fine, and I am certain that in the past four or five years it has changed in texture. One also notices that he is losing his eyebrows and that his skin lacks pigmentation.

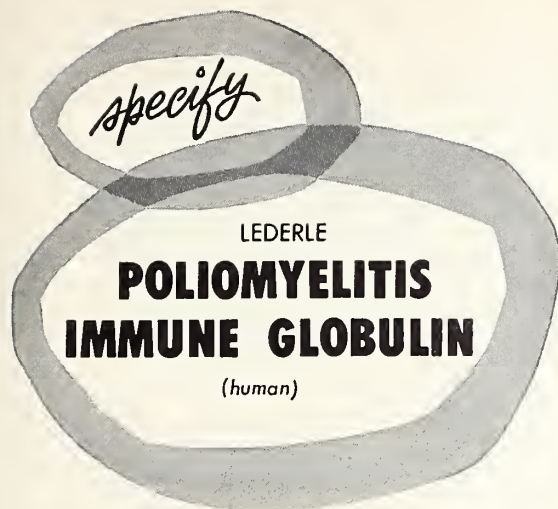
Here is a patient who has myxedema, immediately evident by inspection. There are symptoms and signs of adrenal cortical and of testicular insufficiency. These things we can verify. One immediately looks for something that can account for all these coexisting phenomena; one must think of pituitary deficiency, probably caused by tumor.

Pressure on the optic chiasm by an expanding pituitary tumor may produce bitemporal hemianopsia and eventual blindness. Several years ago I observed this complication in a patient whose initial symptoms and findings were almost identical with this man's. Can loss of vision be prevented?

Dr. Allbritten: Dr. Williamson, would you discuss the neurosurgical aspects of this case?

Dr. Williamson: One look at the man leads one to think that he has a pituitary tumor. In attempting to prove it one falls short in two spheres. One is the x-ray evidence of the normal size of the sella tursica, and the other is the absence of neurologic involve-

Cancer teaching activities at the University of Kansas Medical Center are aided by grants from the National Cancer Institute, U. S. Public Health Service, and the Kansas Division of the American Cancer Society. Dr. Klionsky is a Clinical Fellow of the American Cancer Society.



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ment of the optic chiasm which is just above the sella. Ordinarily a chromophobe pituitary adenoma begins to grow within the sella tursica. Before it breaks out enough to compress the optic chiasm and cause loss of vision, it usually causes enlargement of the sella evident on roentgenograms. Normal sized sellas are reported in cases of pituitary adenoma which originate from the pituitary stalk. However, a tumor arising above the sella tursica would be even more likely to involve the optic nerve or optic chiasm. This man has absolutely normal visual fields and normal appearing optic discs with no trace of optic atrophy.

The question for the neurosurgeon is whether there is enough evidence of pituitary adenoma to justify (1) surgery, (2) x-ray therapy, or (3) further studies in an attempt to prove the diagnosis. A carotid arteriogram is a helpful diagnostic study. The carotid artery runs along the sella tursica and just above it and is displaced by a pituitary tumor. A pneumoencephalogram could be considered, but it is not very satisfactory in outlining a lesion in that region. We considered both these studies and still could do them. However, such procedures may be stressful and shocking, particularly for a patient with hypoadrenalism.

Regardless of what such procedures might show, if he does have a tumor above the sella tursica, from the practical point of view it is going to stay there. The neurosurgeon does not operate on pituitary adenomas in order to change the endocrine status, because he cannot improve it. He operates solely to save vision, and this man has lost no vision. If this patient has a glioma of the hypothalamus, it, too, is inoperable. It is difficult to decide what to do for this man. I am afraid, as is Dr. Delp, that eventually the pathologist will make the diagnosis of glioma of the hypothalamus or of a very atypical chromophobe adenoma. This is a most interesting and difficult problem, and the practical thing I can answer—that is, we can't cure him with an operation.

Dr. Allbritten: How does this differ from Simmonds' disease, Dr. Delp?

Dr. Delp: True Simmonds' disease is similar to this. Simmonds' disease is an endocrine disorder with profound panhypopituitarism. There has been much confusion between it and anorexia nervosa, simply because of the cachectic state into which both diseases led. This man has no diabetes insipidus. His adrenal cortical insufficiency has been fairly well controlled with cortisone up to the present, and can be controlled in the future. There is no reason why he should become cachectic if he does develop diabetes insipidus.

Dr. Stowell: The neurosurgeon thinks that this patient is not a candidate for surgery. Does the radiologist think he is a candidate for irradiation?

Dr. Germann: We must admit that this man is

hypopituitary. Irradiation would only aggravate the situation. There is no convincing evidence, at least as yet, that this is a proliferating tumor. The radiotherapist uses irradiation for the same reasons that the neurosurgeon operates: to save vision or stop the progression of growing tumor. Under present circumstances we would not be justified in the use of radiation therapy.

Dr. Allbritten: Would radiation therapy to a pituitary neoplasm alleviate his hypopituitarism?

Dr. Germann: No.

Dr. Allbritten: Dr. Brackett, do you have any comments?

Dr. Brackett: I think that there is considerable doubt about the diagnosis of a pituitary adenoma. Patients with chromophobe adenomas usually have enlarged sellas and complain of headache by the time that loss of libido and signs of adrenal insufficiency are present.

This man's atypical history suggests the absence of a tumor. A tuberculous granuloma must be considered as a diagnostic possibility.

Dr. Allbritten: Since neither surgery nor irradiation is indicated at present, what should be the plan of management?

Dr. Delp: Therapy with thyroid, cortisone, testosterone, and ACTH will be instituted to control the endocrine imbalance.

Although a definite etiologic diagnosis has not been made, the probability is that the pituitary lesion is a chromophobe adenoma. Signs of visual impairment may develop, and neurosurgery may eventually be necessary to prevent blindness. Periodic examinations at approximately three-months intervals should include roentgenograms of the skull and evaluation of the visual fields.

Editor's note: After ten months the patient's endocrine disorder has been controlled by replacement therapy as indicated, and he has returned to work. No visual disturbances have developed, but continued observation is indicated.

The 1956 meeting of the Kansas Medical Society will be held in Topeka, April 29-May 3.

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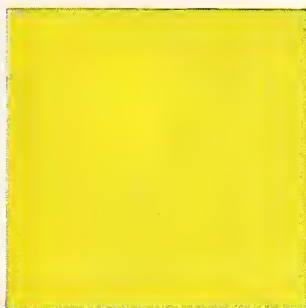
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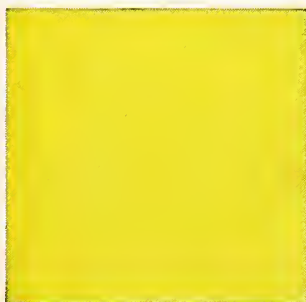
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THE MONTH IN WASHINGTON

Editor's Note. The following summary of Washington news was prepared by the Washington office of the A.M.A. for distribution to state and regional medical journals.

Within a few months there will be under way the first comprehensive survey ever to be made of the nation's mental health problems. The study will attempt to measure the extent of mental illness, to judge the progress and lack of progress in research, and to estimate the additional hospitals and clinics and trained personnel needed before a start can be made toward a solution.

A newly-formed Joint Commission on Mental Illness and Health already has begun preliminary work on the survey. The all-out effort will be initiated—possibly before the first of the year—after the Commission has received the formal approval of the National Mental Health Advisory Council of U.S. Public Health Service and the Surgeon General. Once this endorsement has been given, \$250,000 in U.S. funds will be available to help with the first year's operations. Another million dollars is to be supplied over the following two years.

Originally, the Joint Commission was formed by the American Medical Association's Council on Mental Health and the American Psychiatric Association. Later other associations joined in, including the American Association of Psychiatric Social Workers, the American Hospital Association, the American Nurses Association, the National League of Nursing, the American Psychological Association, and the National Education Association.

A nationwide survey has been the objective of these associations for more than a year. Substance was added to the idea this year when Congress approved the \$1,250,000 fund, to be used over three years, for a comprehensive study. The law specifies that the investigation be conducted by non-governmental bodies; to fully qualify, the Joint Commission has been legally incorporated.

At hearings before Congressional committees early this year psychiatrists and others outlined the complex problem they are facing.

The care of mental patients is one of the great financial burdens of the states; rate of cure and rehabilitation is so low that institutions are being filled as fast as they can be constructed; half the hospital beds are occupied by mental patients, and their care costs more than a billion dollars a year in tax funds.

There are not enough psychiatrists trained to ad-

minister state programs or even all the large hospitals; competition for the top men in this field has been compared to the proselyting of football players and coaches.

Many of the leading psychiatrists complain that too much attention is being paid to constructing hospitals and not enough to research, which might develop treatments that would keep many patients out of institutions and bring about the rehabilitation of hundreds of thousands of others now hospitalized.

In testifying before a House committee early this year, Dr. Leo H. Bartemeier, representing the A.M.A., argued for federal help in conducting the survey. He told the committee: "For several years we in the profession of psychiatry have been aware of the critical need for a survey and evaluation of our facilities and programs for the diagnosis, treatment, and care of the mentally ill and retarded. While the problems of mental illness appear to grow in almost geometric proportion, we find ourselves without a comprehensive, up-to-date, integrated body of knowledge in spite of the fact that many worthwhile surveys and studies in this field have been made. It is only with such complete knowledge that our present and future direction and programs can be properly planned."

NOTES

Before it prepares a report on the narcotic problem, the Senate subcommittee will have held hearings in most parts of the country. Many local addiction problems have been described. At the New York hearing, the subcommittee was urged to recommend a system of clinics, where the addict legally could obtain narcotics at reasonable cost, thereby defeating the rackets.

Although states either may take U.S. grants to buy Salk vaccine or the vaccine itself, most of them are taking the money.

Veterans Administration has set up a seventh area medical office in Columbus, Ohio, a move that it believes eventually will provide better service at less cost.

Almost nine million dollars will be spent next year on health work in North, South, and Central America by international bodies, such as World Health Organization. One project is the starting in Mexico of a four-year malaria eradication program.

The Navy has set up a program for training Waves as nurses; they will be obligated for a year's active duty for each year of training.

Bureau of Internal Revenue has summarized deductible and non-deductible medical expenses for income tax purposes; the listings combine new interpretations with a clarification of old rulings.

The A.M.A. clinical meeting will be held in Boston, November 29-December 2.

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1. Eisenberg, et al., *Antib. & Chemo.*, 3:1026-1028, Oct., 1953.



Hemodynamic Aspects of Hypertension with Special Reference to the Viscosity of Blood

William F. Casteen, M.D.

Kansas City, Kansas

This paper will attempt to examine the physiological relationships of blood flow and thereby seek to gain understanding of the pathological physiological mechanics of hypertension.

Hypertension is known to the physician by an increase in arterial blood pressure. Arterial blood pressure is but one aspect of the dynamic state of the circulatory system. Needless to say, understanding of a disturbance of this dynamic system can be based only upon knowledge of the physiological dynamics governing the system.

The term "hypertension" as used in this paper will be restricted to (1) those disease states where increase in blood pressure occurs secondary to chronic kidney disease; (2) the condition commonly known as "essential hypertension." The anatomical lesions occurring as a result of prolonged high blood pressure will not be considered.

I. THE CARDIOVASCULAR SYSTEM AS A SIMPLE CLOSED FLUID-FLOW SYSTEM

The cardiovascular system consists essentially of a group of highly branching fluid-conducting tubes establishing a fluid circuit about a pump, the heart. Friction exists in the flowing fluid and exerts a force tending to oppose the motion of the fluid. The heart exerts a force on the fluid system which creates blood pressure (force per unit area) and overcomes the frictional force.

The arterioles act as a valve tending to shut off or open up flow in the fluid circuit and are in turn controlled by neurogenic and humoral mechanisms. The pump is one of variable displacement and is also under the control of neurogenic and humoral mechanisms as to both stroke volume and frequency of contraction. The system is further complicated by the fact that the fluid conducting tubes are elastic.^{1, 2}

Since the system is constructed around a mass in motion, the laws of basic mechanics must apply, and two entities are cardinal: force and mass. Since we are dealing with a fluid system, in general terms, pressure and volume may be considered. For a given fluid conduit:

$$\text{Rate of flow} = f(\text{pressure}) \times f \left\{ \frac{1}{\text{resistance to flow}} \right\} \quad (1)$$

It should be noted that in this relationship, considering the conducting system, pressure and resistance are independent variables, and volume rate of flow is a dependent variable. Volume rate of flow and pressure can be measured.

In hypertension it has been demonstrated that the cardiac output is normal and the mean arterial pressure increased. Therefore, resistance must be increased also.

Considering the pump, volume rate of flow and resistance are independent variables, and pressure is a dependent variable. Hypertension may then be produced as a compensatory mechanism by the pump to maintain normal rate of flow in the face of increased resistance, or as a result of increased peripheral resistance protecting the capillary beds from a derangement in the pump tending to greatly increased cardiac output.

It will be assumed that the first alternative is the correct one. Hypertension then must be the result of a normal cardiac output in the face of increased peripheral resistance. Factors determining peripheral resistance will now be considered.

II. THE APPLICABILITY OF POISEUILLE'S LAW

In 1839 and 1840, Nagen and Poiseuille, working independently, enunciated the concept of laminar flow and the basic mathematical relationships of such flow.^{3, 4} These relationships state that when laminar fluid flow occurs in a cylindrical tube, the rate of flow varies directly with the pressure drop and with the fourth power of the diameter of the tube, and inversely with the length of the pipe and viscosity of the fluid flowing:

$$V = \frac{\pi d^4 w \Delta P}{128 \mu L} \quad (2) \quad \text{where:} \quad \begin{array}{l} V = \text{volume rate of flow} \\ d = \text{diameter of the tube} \\ w = \text{specific weight of the fluid} \\ \Delta P = \text{pressure drop between two reference points} \\ L = \text{length of tube between reference points} \\ \mu = \text{absolute viscosity of the fluid} \end{array}$$

If the discharge pressure of the tube be held constant, it is seen that the pressure drop ΔP is proportional to

This is one of 11 theses, written by fourth year students at the University of Kansas School of Medicine, selected for publication by the Editorial Board from a group judged to be the best by the faculty at the school. This paper received first prize in the 1955 Phi Chi award contest. Dr. Casteen is now serving his internship at the University of Kansas Medical Center.

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1. Rosenberg, S. and Oster, K. A., "Gelatine in the Treatment of Brittle Nails," *Conn. State Med. J.* 19:171-179, March 1955.
2. Tyson, T. L., *J. Invest. Dermat.* 14:323, May 1950.

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the applied pressure P , and equation 2 may be written:

$$V = \frac{d^4 w P}{128 \mu L} \quad (3)$$

Now L , d , w , and μ are factors associated with resistance to flow, and for any given system the resistance to flow R may be stated:

$$R = \frac{128 \mu L}{d^4 w} \quad (4)$$

Substituting equation 4 in equation 3:

$$V = \frac{P}{R} \quad (5)$$

which is the form of Poiseuille's law commonly used by physiologists. It should be noted that equation 5 is a special form of equation 1, where fluid flow is of a laminar nature in a cylindrical conductor. Most investigators in circulatory physiology believe blood flow in virtually all parts of the peripheral circulation to be laminar in character.

Since blood pressure is elevated because of increased total peripheral resistance (R), if one accepts laminar flow, equation 4 must contain a factor or factors, a change in which results in increased peripheral resistance. Further, since the mean arterial pressure is known to be increased in the order of two or three fold during hypertension, a linear factor affecting total peripheral resistance need change only a corresponding amount.

The factors governing equation 4 for a given vessel segment are length of the segment, specific weight of the blood, the diameter of the segment, and the viscosity of the blood. Before examining each of these factors in detail it should be pointed out that since R varies inversely with diameter as a rather large exponential function (d^4), only the smallest vessels will contribute significantly to the effective peripheral resistance, hence one need only be concerned with relationships of flow in the arterioles and capillaries.

An increase in length of the individual arteriole by a factor in the order of magnitude of two or three fold would result in an increase in peripheral resistance comparable to that found in hypertension. Such anatomical change has not been reported by pathologists, but such a change in length of arterioles might be difficult to determine on study of microscopic sections.

A change in specific weight of blood by a factor in the order of magnitude of two or three fold is obviously impossible since the principal constituents of blood are present in normal concentrations in blood of hypertensives.

The ability of the arteriole to change diameter and its function in controlling circulation through the

various hemic circuits of the circulatory system are well known. Most modern investigators assume that arteriolar constriction is the cause of increased peripheral resistance in hypertension.^{5, 10}

As has been pointed out in the preceding discussion, the resistance to flow (assuming all other factors constant) and the mean arterial pressure vary inversely as the fourth power of the diameter of the arteriole. It is readily calculated then, that a reduction in caliber of an arteriole by 50 per cent affords an increase in resistance to flow of 16 fold. To increase resistance by 50 per cent the arteriolar diameter need decrease only by approximately 15 per cent. To increase resistance by 10 per cent, arteriolar diameter need decrease only 0.2 per cent. For a biological regulatory mechanism to operate at such tolerances would be most unusual. It seems most likely that all arterioles are not governed to this degree of accuracy, but that averaging obtains and peripheral resistance may be closely controlled by rather crude changes in diameter of large numbers of arterioles.

Since the vasomotor system, together with humoral agents, maintains and regulates blood pressure, it has long been assumed that hypertension is a result of a derangement of the regulatory mechanism. The humoral mechanism thought to be present inducing vasoconstriction in renal hypertension will not be considered.

Essential hypertension has been thought to represent a generalized neurogenic vasoconstriction caused by derangement in the neural regulatory mechanism. This theory has had its basis in "logical assumption" more than in experimental proof.^{5, 11} Strong experimental evidence indicates that if vasoconstriction is an etiological factor in hypertension, it is not neurogenic in character.

Printzmetal and Wilson state at the beginning of their work on the nature of the peripheral resistance in hypertension,⁷ "From the physiological point of view elevation of blood pressure may be due to an increase in cardiac output, in the volume or viscosity of the blood, or in the resistance of the peripheral vessels." They cite references establishing the normality of all but the last factor in hypertension. By direct application of heat, and by reactive hyperemia, vasodilatation was induced in the upper extremity of hypertensives and controls. The changes in blood flow were found to be equal in the two groups. The authors concluded that the increased peripheral resistance was due to generalized vascular hypertonus. By Novocaine injection of upper dorsal sympathetic ganglia, it was also shown that the generalized vascular hypertonus was not neurogenic in origin. These investigators suggested that *intrinsic* hypertonus exists in the arterioles. These experiments actually indicate that the vasomotor system in hypertension acts in a



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normal manner and offers no evidence for or against reduced arteriolar diameter.

In more recent times, Kowalski et al.¹² measured changes in vasoconstrictor tone in the human lower extremity, in hypertensives and controls, using tetraethylammonium. Again, these investigators assume increased total peripheral resistance and arteriolar hypertonus to be synonymous. Their findings agreed with those of Printzmetal and Wilson, that the prevailing level of neurogenic vasomotor tone in the extremities was not found to be increased in patients with hypertension. Again, these experiments merely demonstrate increased peripheral resistance and that this increased resistance is not due to neurogenic vasomotor tone. No conclusions concerning the diameter of arterioles can be drawn.

Several German investigators in the early 1900's studied the viscosity of blood.^{13, 22} Their studies were based on measuring the flow in a glass capillary tube arranged in a manner similar to that known as the Hess viscometer. The normal relative viscosity (viscosity relative to that of water) as determined by these investigators varied from 4.51 to 5.12, with percentage deviation of about four per cent. These investigators found rather marked physiological variations in blood viscosity.

Hess¹⁶ and others showed that the viscosity of the blood varies with age, increasing as age advances. Adam¹⁸ determined that viscosity does not vary directly with specific gravity. These investigators disagreed about the effect of erythrocyte concentration upon blood viscosity. Determann²² noted, "though a fairly close parallel exists between the two, so many exceptions are found, that on the determination of the red-cell count, no safe inference as to the viscosity of the blood can be drawn."

Burton-Opitz,¹⁹ on the other hand, stated that "the red corpuscles are the principal factor in determining the viscosity of the blood." Austrian²³ found that frequently erythrocyte concentration and viscosity varied in direct proportion, but in many instances no close parallelism could be proved. Austrian concluded that although erythrocyte concentration was important in determining viscosity, it was not the dominant factor. Austrian also found considerable variation in viscosity of plasma.

Determann²² believed the viscosity of blood to be dependent at least to some extent on the osmotic tension between plasma and the erythrocytes. Burton-Opitz²⁰ found that the blood of dogs fed on meat has a higher viscosity than that of hungry dogs, or those on a low protein diet. He also found that food rich in fat increases the viscosity of the whole blood. Adam¹⁸ studied viscosity of protein and salt solutions and found that all salts did not affect viscosity to the same degree. Koryani and Bence²¹ found that the gaseous content of the blood affected its vis-

cosity and determined that increasing CO₂ content increased viscosity.

Austrian demonstrated that by arranging for dogs to re-breathe, viscosity could be increased as much as 20 per cent. He studied viscosity of blood and plasma in several diseases. He found diminution of viscosity of blood in anemia proportional to the severity of the anemia, and an increased viscosity of plasma in polycythemia which did not vary as a linear function of the erythrocyte concentration. An increase in viscosity of plasma in polycythemia was also found. In cases of chronic nephritis with hypertension, no significant deviation of viscosity was found.

In 1913, Rothmann²⁴ measured the viscosity of blood by means of glass capillary tubes having a diameter between 0.1 mm. and 0.2 mm. He found that viscosity decreased progressively with increasing rates of flow until a critical rate of flow was approached (Figure 1). The rate of flow at which the viscosity became constant depended upon the diameter of the capillary tube. The effect was enhanced by increasing the relative concentration of erythrocytes.

Rothmann considered this phenomenon to be due to an interaction between the cells and the walls of the tubes, that is, in very small tubes the viscosity is not independent of the walls and the rate of flow. This phenomenon has also been interpreted as indicating that at higher velocity the cells are thrown into

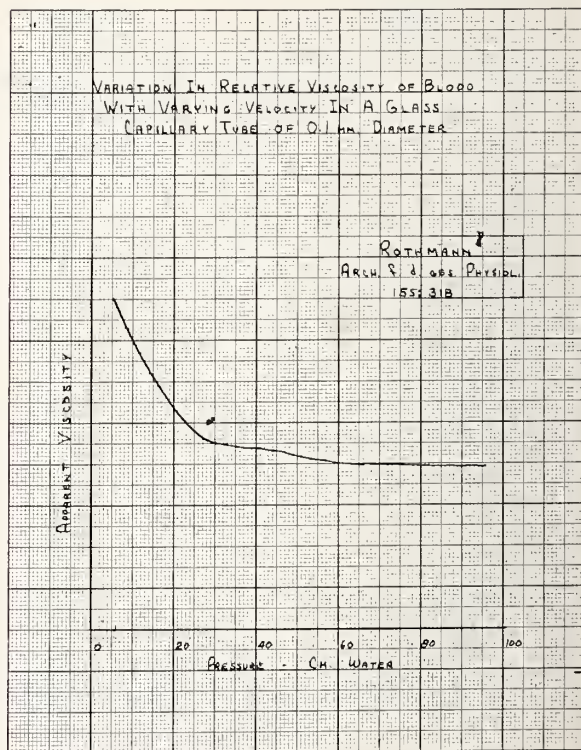


Figure 1

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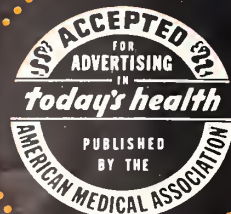
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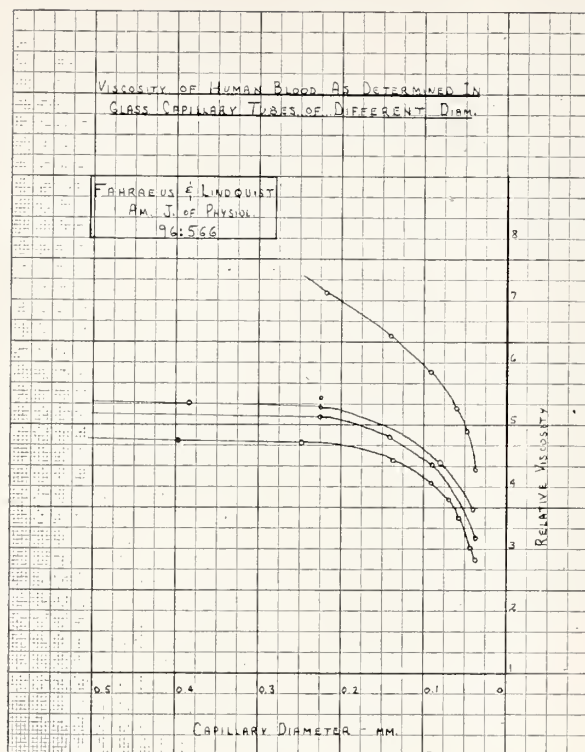


Figure 2

the center of the flow stream leaving only plasma in close contact with the walls and hence reducing the viscosity. It should be noted that the diameter of Rothmann's tubes was roughly ten times the diameter of a capillary. Hess had been aware of this phenomenon and had pointed out that in order to obtain accurate data with his viscometer, sufficiently high velocities must be used. Velocity was not standardized, however, and this may explain the different results obtained by early investigators using glass capillary viscometers.

In 1929, Harris and McLoughlin²⁵ studied the viscosity of blood in hypertensives with a Hess viscometer and reported that in 35 of 40 cases studied, viscosity was increased from 50 to 100 per cent. Systolic pressures only were obtained as an index of arterial pressure.

In 1935, Pickering,⁶ using a glass viscometer, studied the viscosity of the blood in nine hypertensives. He found no correlation between systolic and diastolic pressure levels and blood viscosity.

It will be shown that measurements of viscosity of whole blood with a glass viscometer are misleading.

In 1931, Fahraeus and Lindquist²⁶ reviewed the work of previous investigators attempting to measure the viscosity of blood in narrow capillary tubes. They then measured the viscosity of blood in very accurately made glass capillary tubes of varying diameter. They used a pressure differential accurately stand-

ardized at 100 mm. Hg. Their results are summarized graphically in Figure 2.

This clearly indicates that viscosity is reduced with reduced diameter of the tube. "There seems to be no reason why the viscosity of the blood in still narrower tubes may not come very close to or perhaps coincide with the viscosity of the plasma. The law of Poiseuille does not apply to the flow of blood in capillary tubes of a diameter below about 0.3 mm." The arterioles and capillaries are vessels whose diameter is less than 0.3 mm. These investigators offer the theory that erythrocytes seek the center of the flow stream.

In 1933, Whittaker and Winton²⁷ reviewed the literature and pointed out, "The apparent viscosity of the blood flowing in the arterioles depends on the velocity of flow, the dimensions of the vessels, and possibly on other factors; it is evident that at the moment even the order of its value can hardly be predicted from the results of experiments on blood flow through glass tubes." These investigators perfused the hind limb of a dog at different pressures and noted the rate of flow (Figure 3 and Figure 4).

Figure 4 clearly shows the linear relationship indicating Poiseuille's law applies to blood flow in the extremity. The extremities used for perfusion were completely severed from the animal and determinations delayed for three hours to eliminate neurogenic reflexes and vasospasm.

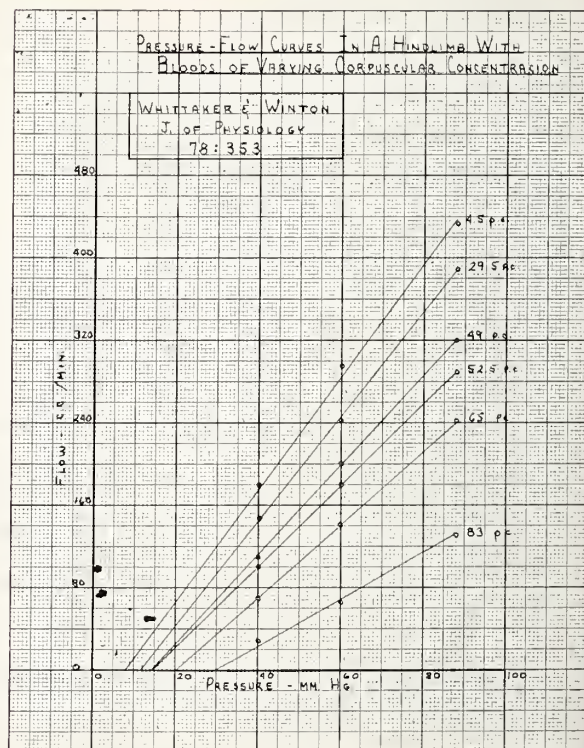
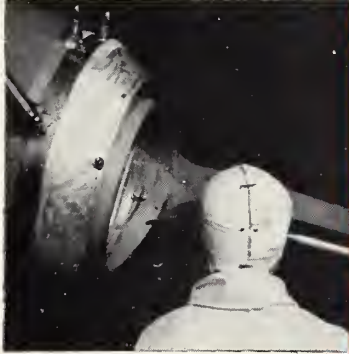


Figure 3

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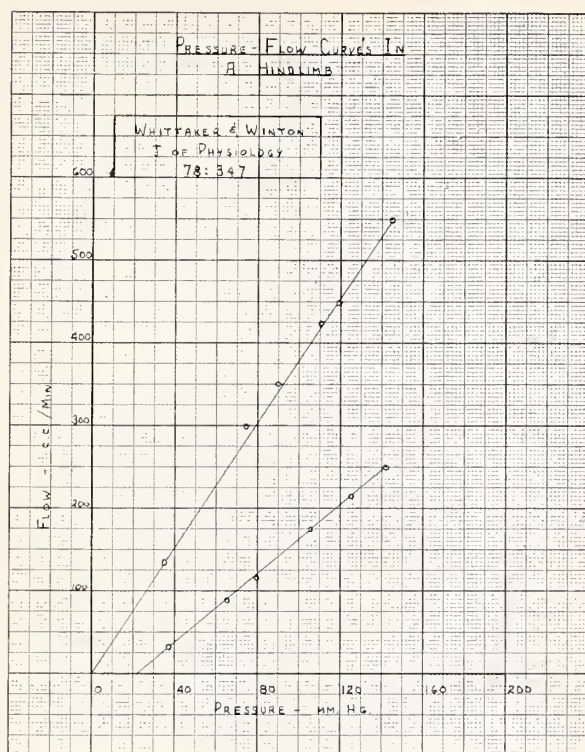


Figure 4

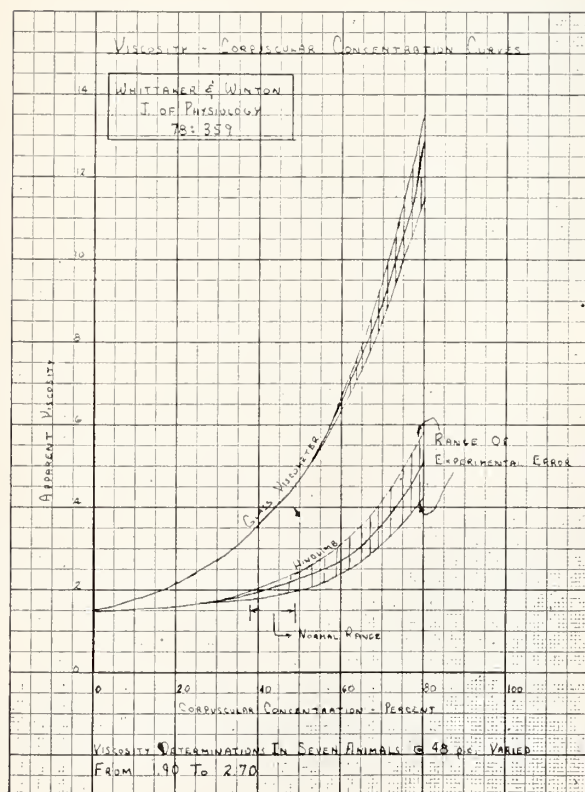


Figure 5

The effect of erythrocyte concentration was demonstrated; the data are summarized in Figure 5.

The fact that a definite pressure was necessary to initiate flow, and that this pressure increased with increasing erythrocyte concentration, was interpreted as resulting from interaction between erythrocytes and vessel walls.

Whittaker and Winton also measured blood viscosity with a glass viscometer at varying erythrocyte concentrations. Figure 5 shows the relationship of viscosity so obtained with the viscosity obtained by perfusion, at different erythrocyte concentrations.

It is assumed that these investigators used blood of the animal from which the limb was obtained. Data are given for seven limbs. Viscosity varied as much as 50 per cent between different animals although erythrocyte concentration was essentially constant.

Evidence indicating that vasoconstriction does not alter the characteristics of flow was obtained. This is summarized in Figure 6.

From Figure 5 it is apparent that the viscosity of blood in the region where the greater part of peripheral resistance occurs is almost independent of the hematocrit and is for practical purposes identical with that of plasma. The work of early investigators on plasma viscosity, therefore, is essentially valid within the limits of their experimental errors.

Pappenheimer and Maes,²⁸ in 1942, performed experiments similar to those of Whittaker and Win-

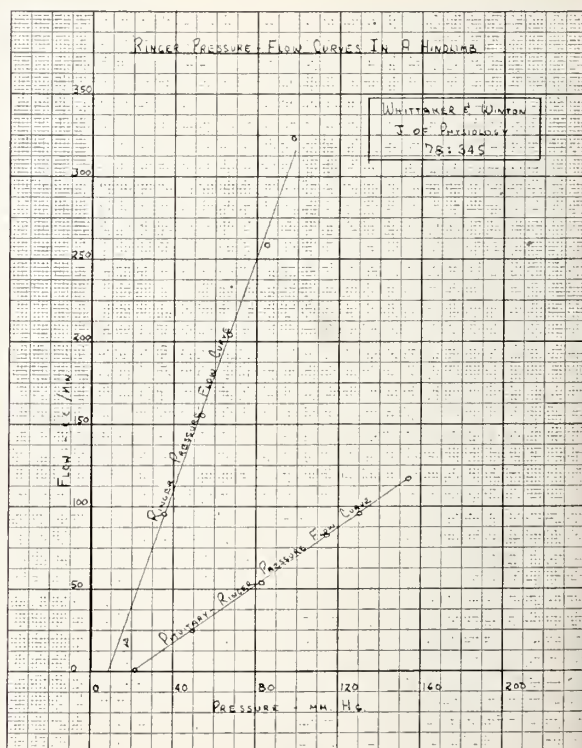


Figure 6

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ton, but used innervated limbs. Vasoconstriction was induced by various agents. Vasoconstriction was shown to increase apparent viscosity by as much as 70 per cent. They also showed that pressure-flow curves during vasoconstriction are linear only when the flow exceeds certain values, and that such curves

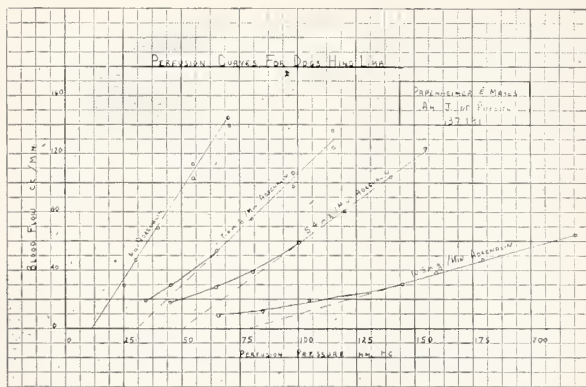


Figure 7

are parabolaes about the flow axis and whose vertices lie at the origin (Figure 7). These investigators proposed the slope of the straight portion of the perfusion curve with Ringer's solution as an index of vasoconstriction. This probably represented the first logical suggestion for measuring even the relative diameter of an arteriole in vivo, indirect though it was.

In 1944, Green²⁹ et al. perfused dogs' hind limbs directly from the aorta and with innervation essentially intact. The pressure-flow curves obtained were parabolaes about the flow axis whose vertices lay at the origin. The method of preparation of the limbs differed from the experiments of Whittaker and Winton and Pappenheimer and Maes, so as to more closely approach physiological conditions. The range of perfusion pressures was increased.

These investigators interpreted their results as indicating that the arteriolar diameter is increased mechanically by increasing arterial pressure and hence peripheral resistance is reduced by increasing arterial pressure when vasomotor tone remains constant. These investigators simply state, "Vasomotor activity remained practically constant at a high level," without indicating how this was determined. Without proof that vasomotor tone remained constant, one cannot be certain that the shape of the curve is not indicative of the form of response of vasomotor reflexes (vasodilatation as a reaction to increasing perfusion pressure). Since blood was supplied from the aorta, flow was pulsatile.

Thus attempts to measure viscosity of blood and relative arteriolar diameter have become intertwined. References citing plasma viscosity determinations in

patients with hypertension on a rigorous basis with a large number of patients have not been found by this writer.

III. THE ARTERIAL PULSE PRESSURE

Although both the systolic and diastolic arterial pressures are increased in hypertension, the systolic pressure is increased out of proportion to the diastolic pressure, resulting in an increased pulse pressure.³⁰ Generally, the greater the elevation of systolic and diastolic pressures, the greater the pulse pressure.

The systolic and diastolic pressures represent only maximum and minimum values and do not give a complete picture of the variation of arterial pressure during the cardiac cycle. Tracings of arterial pressure have been obtainable for many years. Recently improved methods have been available, and the value

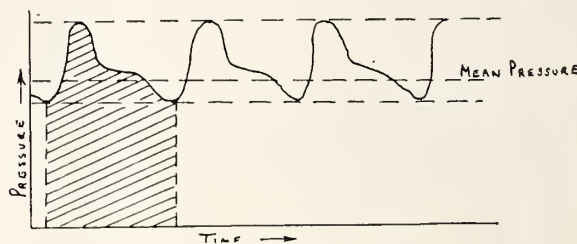


Figure 8

of such tracings in various pathological-physiological states of the circulation have been pointed out.

An arterial pressure recording from a large artery is sketched in Figure 8.

The mean pressure may be obtained by measuring the area under the curve for one cardiac cycle and dividing this quantity by the time required for the cardiac cycle. The mean pressure is the effective pressure in pushing blood out of arteries. The mean pressure cannot be calculated by averaging the systolic and diastolic pressures, and it must be appreciably lower than such an average. Considerable variation can occur in mean blood pressure with systolic and diastolic levels held constant. This can only be interpreted as reflecting changes in peripheral resistance, probably the degree of vasoconstriction of arterioles, despite the fact that systolic and diastolic pressure remained constant.

Peterson, Dripps, and Risman³¹ have pointed out the advantages of actual mean pressure measurement and pressure wave interpretation. Volpitto, Woodbury, and Hamilton³² have indicated the value of pressure wave interpretation in forecasting incipient shock in the surgical patient.

Upon inspection of Figure 8, it is apparent that the mean pressure more closely corresponds to the diastolic pressure than to the systolic pressure (normal individuals). Hence the diastolic pressure af-

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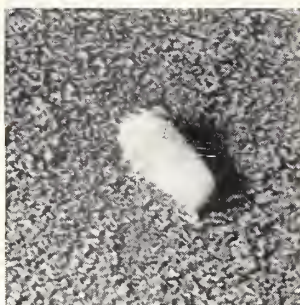
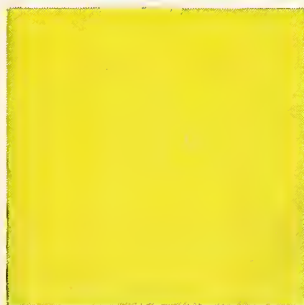
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fords a better index of total peripheral resistance than does the systolic pressure. This deduction agrees with the clinical observation that the peripheral vascular lesions of hypertensive cardiovascular disease correspond more closely with the diastolic pressure levels than with systolic pressure levels.

The heart, however, must do its work during systole, and hence the work of the heart will be closely correlated with the systolic pressure level. Cardiac hypertrophy and ventricular strain patterns should correlate more closely with systolic pressure levels.

The increased pulse pressure associated with extensive arteriosclerosis in elderly individuals is well known and is undoubtedly related to decreased distensibility of arterial walls.³³ Many hypertensives, however, show high pulse pressures without anatomical evidence of advanced degenerative changes in arterial walls.

Weiss et al.³⁰ studied cardiac output, blood volume, pulse wave velocity, and oscillometric measurements in hypertensives with different ranges of pulse pressures. These investigators concluded that augmented pulse pressures in hypertension were probably due to unknown changes in arterial and arteriolar walls.

Physiologists have been in disagreement as to whether peripheral resistance or arterial elasticity plays the dominant role in determining pulse pressure.

Wiggers³⁴ studied a circulation model and concluded that in elastic tubes with a linear volume-elasticity coefficient, increasing peripheral resistance reduced pulse pressure. This is in agreement with theoretical deduction. This may be interpreted as evidence that the volume-elasticity coefficient of the arterial system is not linear. Wiggers perfused the dog's aorta in situ and obtained a volume-elasticity curve. Difficulty in controlling leakage, however, made his data questionable.

Williams and Schroeder³⁵ obtained tracings of fall in blood pressure distal to occluded arteries in the dog. Arteries studied were those supplying single circulations such as the brachial, femoral, and renal. These investigators were attempting to evaluate peripheral resistance. They concluded that arterial elasticity played a relatively minor role in determining the shape of the curves they obtained, and therefore the volume-elasticity coefficient was essentially linear. Apparently this conclusion was based upon the fact that the rate of change of the slope of the early portion of their curves was essentially constant for varying blood pressures. Considering the relationship between rate of change of peripheral resistance and blood pressure demonstrated by Green et al., this conclusion is not justified.

Wiggers and Wegria³⁶ implanted a device on the aorta of living dogs to measure directly changes in

distension of the aorta. When the measured distension was plotted against measured blood pressure, a straight line resulted up to a value of blood pressure ranging from 30 to 172 mm. Hg. for different animals, at which time a given increase in blood pressure produced a much smaller increase in distension than previous increments of blood pressure. This is shown graphically in Figure 9.

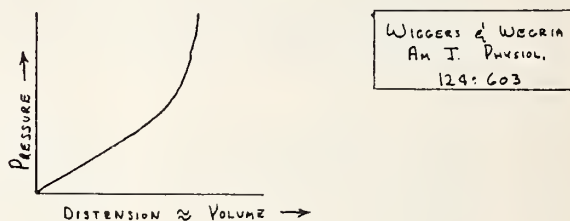


Figure 9

The dimensions and distensibility were found to vary with neural and humoral stimuli. If this work in the dog can be extended to human hypertension, it can be concluded that arterial distensibility plays the dominant role in determining pulse pressure, and the augmented pulse pressure of hypertension can be explained on the basis of non-linear arterial distensibility. The physiological role of altered arterial distensibility by physiological mechanisms is not clear. An increase in distensibility could possibly serve to reduce peak pressures encountered with rapid heart rate and augmented systolic discharge.

SUMMARY

From a hemodynamic point of view, hypertension may be a manifestation of the operation of a defense mechanism of the peripheral circulation against a derangement of the governing mechanism of the heart tending toward increased cardiac output; or as a defense mechanism of the governing system of the heart against increased peripheral resistance in the peripheral circulation. In view of present knowledge concerning the governing system of the heart with respect to cardiac output, the latter possibility is most likely.

Flow of blood in arterioles and capillaries is laminar in character and conforms to Poiseuille's law. Factors controlling resistance to flow are enumerated and examined. Factors most likely to provide increased resistance to flow present in hypertension are increased viscosity of the blood or reduction in diameter of arterioles.

Determination of viscosity of blood is discussed. No reliable information concerning viscosity of blood in hypertension is at hand. Most investigators assume increased resistance to flow in hypertension to be a result of decreased arteriolar diameter. No direct experimental evidence has yet been obtained to sup-



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port this assumption. If reduction in arteriolar diameter does obtain, it is not the result of an increase in neurogenic vasomotor tone.

The increased pulse pressure of hypertension is largely determined by decreasing distensibility of the arterial system with increasing pressure.

Trauma to the peripheral circulation in hypertension should correspond with the levels of diastolic blood pressure. Trauma to the heart in hypertension should correspond with levels of systolic blood pressure.

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The names of two Kansans appeared on the Board of Editors of a new publication, *Resident Physician*, which made its appearance recently, Dr. William C. Menninger, Topeka, and Dr. Howard E. Snyder, Winfield. The journal is being published for physicians who are serving hospital residencies.

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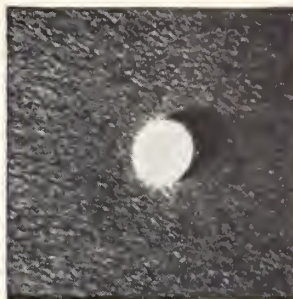
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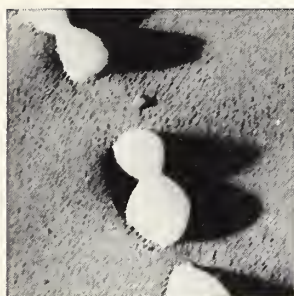
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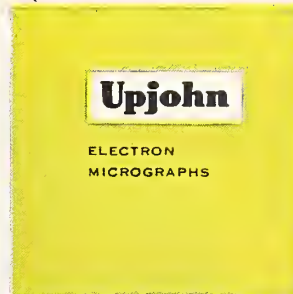
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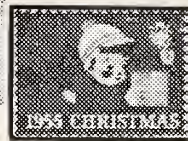
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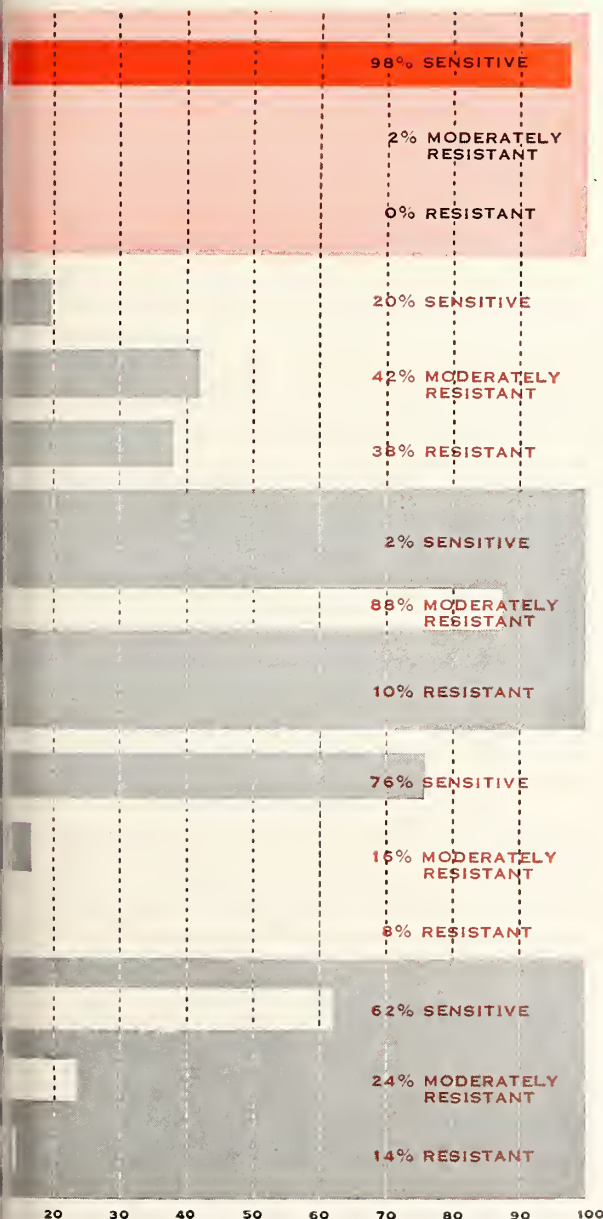
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DECEMBER, 1955

No. 12

Your Bank's Trust Department in Estate Planning

Robert C. Guthrie

Topeka, Kansas

With the full realization that physicians are busy men with little time to read material other than that related to their profession, every effort has been exerted to make this article brief, streamlined, and to the point. Its purpose is to tell of the services a modern bank's trust department can make available to assist the physician in carrying out his estate plan.

At the outset let me emphasize the fact that the trust department of a bank and its trust officers do not purport to formulate an entire estate plan. The lawyer, life insurance man, and accountant all play an important role in the task. Indeed, because of present high income taxes, heavy death taxes, complicated tax laws, continuing inflation, and the low earning power of money, the art of estate planning has become highly technical and, as in the field of medicine, specialization has become the order of the day. The trust officer takes his place with the estate planning specialists and through the facilities of his bank, with its unique corporate attributes, is in a position to serve the property owner in certain areas of estate administration in an invaluable way.

YOUR NEED FOR A WILL

The key instrument in the physician's estate plan should be his will, and the will should be drawn only by his lawyer. I want to emphasize this latter point because laws concerning wills and the disposition of property are complex. Court records are full of histories of litigation caused by the use of ambiguous words or phrases in carelessly drawn wills. In

some of these cases the true intent of the testator has been completely defeated. In view of this, I wish to offer this direct word of caution—do not attempt to prepare a "home-made" will or rely on a "form" someone else has used. Consult your lawyer who has been highly trained for his profession and who, after considering the legal problems involved, can express your wishes as to the distribution of your estate in a manner that will prevent misunderstanding.

Certain arguments are sometimes heard in support of the theory that a will is not necessary for proper estate distribution. Among the reasons often advanced are: "My wife and I own our property in joint tenancy, so I don't need a will," or "The laws of Kansas will take care of my property." Examination of such arguments shows their inaccuracy.

Although joint tenancy with right of survivorship is a simple and effective method of passing title to property in certain instances, it cannot take the place of a will in an estate plan. Suppose a husband and wife with minor children own all of their property in joint tenancy and are killed simultaneously in an accident. In such a case there would be no survivor of the joint tenancy, and the property would be subject to administration. The court would appoint an administrator and the minor children would be subject to guardianship. There would be no assurance that either the administrator or the guardian would be satisfactory to the deceased husband or wife. In this case a will providing for the possibility of simultaneous death could have designated an executor and established a testamentary trust for the children, thus eliminating the expense and inflexibility of guardianship estates.

The author, trust officer of the National Bank of Topeka, is a past president of the Kansas Bankers Association Trust Division and formerly served as a member of the Trust Investment Committee of the American Bankers Association Trust Division. He has done graduate work in banking at Rutgers University.

Another point to consider is that an estate in joint tenancy serves to disinherit children insofar as the first parent to die is concerned. In the surviving parent is lodged the entire responsibility for passing some of the estate to the children. Remarriage of the survivor frequently makes it difficult to include the children of a former marriage in the estate plan. Adverse tax consequences too technical to discuss within the scope of this article may result from joint tenancy ownership. Contrary to the belief of many who are not trained in tax matters, joint tenancy ownership by a husband and wife does not reduce the estate of the spouse whose funds are invested in the jointly held property. Once an estate plan is established, subsequent acquisition or transfer of property in joint tenancy can wreck the plan because the terms of the property owner's will are not effective with respect to the joint and survivorship property.

The idea that the laws of Kansas (or the state of residence) will take care of one's estate without the necessity of a will needs examination. Simply stated, in Kansas the law gives one-half of a man's property to his wife and the other one-half in equal portions to his children. It is not difficult to see the problems created by the legal necessity of establishing guardianships for infant and minor children. Guardianships limit the flexibility of property management and are also costly to administer. Even if the decedent's children have attained majority, the fact that the widow receives only one-half of the net estate may prove to leave her with insufficient means. Furthermore, without a will, the property owner cannot name his executor and must rely upon the court to provide management for his estate during the period of administration and to appoint a suitable guardian if minors survive. Another point is that Kansas law restricts the sale of real estate during the period of administration to estates in which personal property is insufficient to pay debts, taxes, and administration costs. This restriction might cause hardship but can be eliminated through a will which authorizes the executor to sell real estate without order of the court.

Other reasons for not having a will are sometimes advanced, but in the light of careful examination such reasons are usually found to be no more valid than those just discussed.

One concluding word of advice: once a will is properly drawn, signed, and witnessed, it must be periodically reviewed in the light of changing tax laws, new court decisions, births, deaths, altered marital status, change of legal domicile, and possibly other circumstances. A will which has been allowed to become antiquated may cause problems just as serious as those caused by having no will at all.

NAMING YOUR EXECUTOR

The citizens of many countries are not blessed with liberal laws concerning the distribution of their property at death as are we in the United States. Among our many freedoms in making a will is the privilege of exercising a choice in naming an executor. We trust officers are firmly convinced that a number of valid reasons exist for appointing a corporate executor—the trust department of a bank.

Under the Kansas Probate Code, a corporate executor is not entitled to any greater compensation than an individual acting in the same capacity. The only valid argument that cost is reduced as a result of making a member of one's family his executor is that the compensation comes back to the family or a member of it.

In the typical case, a father who is head of a family may wish to name his wife or adult son or daughter or his brother as executor of his will. Of these close family members, the wife is probably the least qualified to carry the burden of estate administration. Yet she is the one the deceased family head would ordinarily want most to receive the benefit of any saving in cost. In other words, for the wife to "save" through earning compensation that might otherwise go to a corporate executor, she must perform a service and assume a burden for which she may be ill qualified. This happens at a time when she has suffered the loss of a loved one, a most inopportune time for her to assume great responsibility. If a son or brother is named because of his better qualification, then ordinarily the widow would receive no compensation and thus there would be no saving in administration costs insofar as she is concerned.

It would be most unusual for a husband during his lifetime, to announce to his wife that he was going to turn every responsibility which he had been carrying over to her, and that he would not even consult and confer with her on problems which would inevitably arise. Yet this is just what a husband does who names his wife sole executor of his estate. It might be argued by some that the husband's lawyer who serves as the widow's attorney would "fill the husband's shoes" to some extent. But the lawyer, though highly capable, might be unable to serve for a number of reasons including illness or even death.

A further objection to naming a member of the family as executor is the very real danger of misunderstanding developing between the one named and the other surviving heirs. Very frequently family disputes of major proportions have developed as a result of estate administration by one of the members of the family. A corporate executor is in a better position to be impartial, unbiased, and firm when neces-

sary, than a member-of-family executor. The compensation of a corporate executor would seem small, indeed, if the services rendered avoided family disputes and hard feeling which otherwise might develop.

Other important attributes of a bank's trust department as a corporate executor should be considered in deciding whether to name a member-of-family or corporate executor. A corporation, generally speaking, has continuous existence. Regulation F of the Board of Governors of the Federal Reserve System provides for continuity of fiduciary service. An individual executor may die, move, become ill, or otherwise become unable to serve; the probability of continuous existence is, at best, questionable.

In addition to continuous existence, a bank also offers continuous capacity, through a succession of directors, officers, and employees. The death or incapacity of an individual executor forces the court to appoint a successor; upon the death or incapacity of bank personnel, others are there to assume the responsibility without delay and without the necessity of the court appointing a successor.

The financial responsibility of the trust department of a national bank is a factor which should be considered. The bank must meet carefully prescribed capital requirements. It must secure the cash in estates and trusts with the pledge of securities as provided by law, and all assets held in the trust department must be kept segregated and rigidly safeguarded under dual vault control.

The collective information and group judgment available through the services of a corporate executor are of great importance. A widow, for example, who is executrix of her husband's will, could hardly be expected to make important estate decisions with the same degree of competence as could the Trust Investment Committee of a bank, composed of senior officers and experienced directors. The person who names a bank as his executor assures himself of group judgment with respect to all important decisions made in the administration of his estate.

The safeguards of governmental supervision should be a factor worthy of mention when selecting an executor. An individual is not subject to such supervision. A national bank, on the other hand, is subject to examination by representatives of the Comptroller of the Currency, the Federal Reserve Bank, and the Federal Deposit Insurance Corporation. The Comptroller of the Currency ordinarily supervises the regular examination of trust departments.

THE BENEFITS OF A TESTAMENTARY TRUST

While the physician is considering his will, he should also contemplate benefits which could accrue to his family through the operation of a trust created

under his will. The term "testamentary trust" is derived from the fact that it is a device created under a "last will and testament." It is one of two main classes of trusts, the other being the living trust which, as the name implies, is created during the lifetime of the property owner.

Although volumes have been written on the subject of trusts, the essential features can be summarized briefly. A trust must have a creator, a trustee, a beneficiary or beneficiaries, property, and terms upon which the property is to be held. The trustee takes the legal but not the equitable title to the property. By statute and by common law, an extremely high standard of honesty and loyalty is required of a trustee to obtain the required relationship with the creator and beneficiaries of the trust. The late Justice Cardozo of the United States Supreme Court, in summarizing the fiduciary (trustee) relationship, made the following statement, which is now classic:

"Many forms of conduct permissible in a workaday world for those acting at arm's length, are forbidden to those bound by fiduciary ties. A trustee is held to something stricter than the morals of the marketplace. Not honesty alone, but the punctilio of an honor the most sensitive, is then the standard of behavior. As to this there has developed a tradition that is unbending and inveterate. Uncompromising rigidity has been the attitude of courts of equity when petitioned to undermine the rule of undivided loyalty by the 'disintegrating erosion' of particular exceptions. Only thus has the level of conduct for fiduciaries been kept at a level higher than that trodden by the crowd. It will not consciously be lowered by any judgment of this court."

The physician must determine whether or not his wife and children should receive outright his whole estate within a short time after his death. Few wives are trained or experienced in the financial intricacies of property management. If there are children, it is doubtful that they could competently assume the difficult task. In an attempt to solve this problem, the benefits of a testamentary trust should not be overlooked. Let us assume a hypothetical case of Dr. Jones, a successful physician 50 years of age who is married and has three children—a daughter 13 and sons 15 and 17. Mrs. Jones, although an excellent wife and mother, is completely inexperienced in business affairs. Dr. Jones purchased life insurance regularly as his income increased, and as he could afford it he invested in some high quality common stocks which have appreciated substantially in value. He owns government bonds, a savings account, and his home. In considering his estate plan, he felt that if some unforeseen event removed him from the family group, it would be both unfair and an unrea-

sonable risk to expect Mrs. Jones to assume full responsibility for the estate he had built. Discussion of the problem with his lawyer, trust officer, and insurance man led to the plan of creating a trust under will into which a substantial share of his estate would be placed after his death. His bank was named as trustee, and the trust in brief provided as follows:

1. Mrs. Jones would receive all of the net income of the trust in monthly payments during her lifetime.

2. In the event of family emergencies, the trustee was given broad power to make payments of principal to Mrs. Jones.

3. Provision for the education of the children was made, based upon the exercise of discretionary power by the trustee.

4. Provision was made, in the event of the death of Mrs. Jones prior to the time each of the children had attained a specified age, that the trustee would continue to hold in trust each child's one-third of the estate until that age was reached. During the period of continuance of the trust estate, the trustee was empowered to use all of the income for the support and education of the children and, furthermore, was given broad discretionary power to use such part of the principal as might be essential for emergencies and education.

5. It was provided, in the event the trust estate was continued for the children after the death of Mrs. Jones, as outlined above, that when each child attained age 21 such child was to receive one-half of his or her share of the trust estate, with the final one-half to be distributed at age 25.

6. The trustee was given power to invest and reinvest in accordance with the laws of Kansas, which in effect permits investments in bonds, debentures, preferred stocks, common stocks, first mortgages, and real property. (Refer to topic on Trust Investments in this article.)

Obviously many provisions in addition to those outlined above must be included to complete the trust vehicle. The impact of taxes should be carefully considered. Although no attempt is being made in this article to discuss in detail the subject of taxation as related to estate planning, it should be noted that to obtain full benefit of the "marital deduction" provision of the law, two trusts might be indicated, one to qualify for "marital deduction" with the other (a non-marital trust) designed primarily for ultimate distribution to the children. The "non-marital" trust, such as the Jones trust, avoids federal estate tax on the trust property upon the death of Mrs. Jones. This example shows that a physician can delegate to a trustee in whom he has confidence the power and duty to manage his property and support his family

after he is gone, and a great degree of flexibility can be embodied in the plan.

THE LIVING TRUST

The primary difference between the testamentary trust, with which we are now acquainted, and the "living trust" is in the method of creation. The former is established through the property owner's will and becomes operative only upon his death, whereas the latter is created during lifetime and is effective from the date of creation. The living trust is implemented by a document known as a Trust Agreement between the property owner (the trustor) and the designated trustee. Under the terms of this agreement, the wishes of the trustor are expressed. As with the will, a trust agreement should be prepared only by the physician's lawyer.

More often than not, a living trust agreement is written so that the property owner can change, amend, or completely revoke it. This type of "revocable" trust does not possess the tax advantages enjoyed by certain testamentary and "irrevocable" trusts, but it does have some important attributes.

A physician who has insufficient time or experience to manage and invest his assets may establish a living trust with his bank's trust department and relieve himself of this burden and worry. All of the details of safe custody, adequate records, bookkeeping, anticipating and receiving income, collecting principal, buying and selling securities, analyzing investments, and making recommendations become the duty of the trustee. Additional property—cash, securities, or real estate—may be added to the trust at any time. The physician can direct the trustee to distribute the income in any manner he desires. He can direct that upon his death the trust shall continue for the benefit of his wife and that upon her death the assets shall be distributed to persons named in the agreement. With an arrangement such as this, in lieu of a will, the living trust can actually distribute the trust property at the trustor's death. (Usually, however, not *all* of a person's property is included in the trust; therefore, a will may be necessary with respect to the non-trust property.)

This ability of the living trust to distribute property upon the trustor's death has several advantages. Foremost, probably, is the minimizing of administration costs because property being transferred under a carefully drawn trust agreement is not subject to probate with the resultant expenses. In this connection, time, too, is saved since the period of administration is ordinarily one year or more. Another advantage stems from avoidance of publicity that arises when a will, which is a public document at death, is filed in the court. A living trust agreement need not

be publicly filed either before or after the trustor's death. Further advantage is derived from the simplicity with which the estate plan provided in the living trust continues to operate upon the trustor's death. There is no delay in assembling assets, locating witnesses, or qualifying the executor; therefore, the uninterrupted continuance of family support is assured.

The living trust, in revocable form, is in one sense a kind of experimental will because the trustor can observe the actual performance of his trustee with reference to investment policies and relationships with beneficiaries. He can consider every provision of the agreement with the assurance that the plan can be changed during his lifetime and that the property held in the trust will be managed and finally distributed in accordance with his instructions after he is gone.

As was indicated earlier, the irrevocable living trust has certain tax advantages, but it cannot be modified, amended, or completely revoked as can the revocable trust. The irrevocable trust provides a means of making a valid gift or gifts, while at the same time giving the donor the opportunity to protect the gift under the terms of a trust agreement. Such a gift in trust removes the property from the top of the federal estate tax scale applicable to the donor's estate and places it at the bottom of the gift tax scale; or, if the donor has not used his gift tax exemption, there may be no tax at all. Furthermore, an income tax reduction may be enjoyed because the income produced by the property donated in trust is removed from the donor's top bracket and is taxable to the beneficiary, whose income tax bracket may well be lower. Competent legal advice is essential to the creation of an irrevocable trust for there are a number of legal questions to be considered. Furthermore, the maker of the trust must survive its creation by three years or more; otherwise, the gift may be attacked as one in contemplation of death.

SHORT TERM TRUST AND LIFE INSURANCE TRUST

Between the revocable and the irrevocable living trusts which we have just discussed is the "short term trust" which does have some tax advantage. It is a device whereby a person may transfer property to a trust which, under the agreement, will be in effect for ten years or more. The trustor designates an income beneficiary, with the provision that at the end of ten years, or a longer period if stipulated, or upon the death of the beneficiary, the trust property will revert to him as the original owner.

Depending upon the terms of the trust with respect to income distribution, trust income is taxable either to the beneficiary or to the trust, either of which might well be subjected to much lower income tax

rates than the trustor. By use of the short term trust, the physician could get some of his income over to a less severely taxed person while his earnings are highest, and at the same time recover it under the reversionary right by the time he is ready to retire.

Another special type of trust arrangement used by many professional and business people is the "life insurance trust." Life insurance is the most effective means of creating an estate which will multiply in value immediately at death. For the young physician in particular, with his increasing financial responsibilities, life insurance is the only method to provide a fixed estate for the benefit of his family in the event of his untimely death. Because of its importance as a means of estate creation, the handling of life insurance proceeds must be arranged with great care.

Most life insurance policies either permit the insured to designate a beneficiary to receive the entire proceeds of the policy in a lump sum settlement or to select a deferred settlement option which provides for payment of the proceeds over a period of years. In many cases, it is unwise to have the entire insurance proceeds paid at once to a widow or other family member who may not have the ability to manage the funds. On the other hand, the deferred settlement options are generally inflexible and cannot ordinarily be changed in any manner after the death of the insured, even though the payments provided for under the option prove to be insufficient for family care.

The answer to this problem can often be resolved through the creation of a life insurance trust under which the insured designates a corporate trustee to receive the policy proceeds in lump sum and retain and administer the funds for the benefit of the insured's family. The insurance trust agreement can delegate to the trustee broad discretionary powers to vary disbursements to the family in accordance with its needs. Thus income and principal can be used to cover the varying costs of the children's education. Financial crises such as are caused by accident or severe illness can be met through emergency distributions from the trustee. Insurance companies cannot provide this degree of flexibility.

The life insurance trust also affords continuous management for the insurance estate, including investment supervision. And finally, under the terms of the trust, provision can be made for the ultimate distribution of the remainder of the trust fund in accordance with the wishes of the insured.

TRUST INVESTMENTS

Trust men are frequently asked questions with respect to the latitude and freedom of trust departments in making investments. In fact, in a survey conducted

by the Trust Division of the American Bankers Association, it was found that more questions were raised on this subject than on any other one. Many of them indicated some degree of misunderstanding about trust investments.

In Kansas, the trust departments of both national and state banks may invest in such assets as are provided for by the statute of the state unless restricted by the terms of trust. In the past 16 years much progressive legislation pertaining to trustees has been enacted in Kansas, including an act defining investments they may make, cited as G.S. Kansas 1953 Supp. 17-5004. A number of states have a similar law, based upon a concept originating in a decision of the Supreme Judicial Court of Massachusetts in 1830 which stated:

"All that can be required of a trustee to invest is that he shall conduct himself faithfully and exercise a sound discretion. He is to observe how men of prudence, discretion, and intelligence manage their own affairs, not in regard to speculation, but in regard to the permanent disposition of their funds, considering the probable income as well as the probable safety of the capital to be invested."

It has been well established that the Massachusetts "prudent man" concept includes a conservative portion of carefully selected common stocks. In fact the Kansas law includes "... bonds, debentures and other corporate obligations, and stocks, preferred or common" It also includes mutual funds registered under the Federal Investment Company Act of 1940, other types of personal property, and real estate.

In selecting investments, the trustee must consider the purpose of the trust, either express or implied. Investment policy will vary from the trust in which conservation of principal is paramount, to the one in which maximum income is the prime objective, to the one in which long range accumulation and growth is indicated. Diversification in corporate investment must be emphasized as to industry, corporation, and type of security. In the selection of investments with a fixed date of maturity, careful consideration should be given to relating such maturity dates to the needs and terms of the trust.

Most corporate trustees use high quality common stocks to a conservative degree. This policy during the inflationary period our economy has been experiencing has proved highly beneficial to trust customers. One need only look at the performance of stocks of leading corporations over the last decade, or even the last year or two, in order to clearly see how such stocks have protected the purchasing power of the dollar.

OTHER TRUST SERVICES

Bank trust departments perform a number of

services other than acting as executor under wills and trustee under the various types of trust arrangements.

Busy physicians often need the services of a "financial secretary." This service is available through an Agency Account under which the physician and his family may be relieved of as many of the burdens of property management as may be desired. Securities and other assets of value are deposited with the bank in accordance with the terms of an agency agreement under which no rights or title are relinquished. The account may be cancelled at any time. Assets are carefully maintained under dual vault control; interest, dividends, rents, and other income are collected; maturing securities are presented for payment; rights in new stock issues, reorganizations, and similar situations are called to attention; complete accounts are maintained from which tax returns may be prepared; bills may be paid and income may be distributed in accordance with directions furnished. Services performed may be just as broad or as limited as the physician desires.

In closing business transactions the service of a trust department as escrow agent is frequently recommended by lawyers. Valuable documents such as deeds, bills of sale, securities, money, or other property are held until the conditions of the agreement are fulfilled, at which time the escrow agent delivers the documents and funds to the persons entitled to them. When an escrow agent is used, the terms of a contract for the purchase and sale of property can usually be completed even though the death of one or more of the parties intervenes.

Bank trust departments frequently serve as guardian of estates of minors or incompetents. Many corporations employ the facilities of a trust department to serve as transfer agent and registrar for stock issues, trustee under bond indentures, paying agent for bond principal and interest and dividends on stock.

In closing, I wish to express a personal thought which arises in a large measure from my observation of men who have seen to it that their financial affairs were brought to an optimum of good order. The knowledge of an estate well planned for his family's welfare brings a deep sense of satisfaction to a man which is a real contribution to his peace of mind. But the satisfaction and peace of mind thus coming to a man during his lifetime may, after he is gone, be far exceeded by the satisfaction and freedom from worry experienced by his loved ones through the operation of an estate well planned.

National Bank of Topeka
Topeka, Kansas

The Doctor and His Tax Problems

Harold R. Schroeder, LL.B.

Topeka, Kansas

The professional man in private practice finds little opportunity to take advantage of "fringe benefits." It is perhaps the lack of "fringe benefits" which makes his income taxes proportionately higher than those of corporate officers and employees. The use of company cars, expenses paid for attending sales meetings in certain geographical areas which provide good fishing, good hunting, and relaxation, stock options, availability of clubs—all of these and many more are usually beyond the grasp of the professional man.

The answer to the professional man's tax problems does not lie in the use of "tax gimmicks." His answer must be found in proper tax planning, present and future. He must utilize all advantages afforded to him by the revenue laws. Many income tax savings are insignificant when standing alone; however, if such savings are combined, then the total result can be most gratifying.

In the preparation of this article I find it difficult to set any definite rules for tax savings because the age of the individual and his financial and marital status must be considered before a given rule of tax saving can be achieved. This can best be exemplified by comparing the tax problem of a young physician with the tax problem of a seasoned practitioner as relating to the purchase of new equipment.

The young man just starting in practice can anticipate a possibility of having less income in the first few years of his practice. This being true, it would follow that the utilization of the "accelerated depreciation" provisions of the 1954 Internal Revenue Code may be to his disadvantage in that the increased "deduction" for depreciation would offset income taxed in a low tax bracket. On the other hand, depreciating the new equipment without using the accelerated depreciation provision would make available a deduction for depreciation at a time when he might be in a higher tax bracket due to the realization of more income from an established practice. To an individual well established in his practice, the accelerated *current* deduction for depreciation may be more advantageous. Thus, the election to use the accelerated depreciation provisions depends upon the circumstances of the particular individual.

Another simple but often overlooked tax saving can be achieved by the receipt of dividends on stock

purchased. The first \$50 of dividends received in a taxpayer's taxable year is exempt. A husband and wife can obtain \$100 in dividends tax free. These savings are not large; however, if you are in a 40 per cent bracket you must earn \$166.67 from your practice in order to have the same after tax dollars as the \$100 received in the form of dividends. In addition on all dividends received in excess of \$100, you are entitled to a credit against tax equal to 4 per cent of such excess dividends, subject to a few limitations defined in the law. (Note the 4 per cent credit is an offset to *tax*, not income.)

Then there are possible tax savings through the use of short term trusts.

A doctor having the responsibility of fatherhood, among his many other responsibilities, must accumulate sufficient wealth to meet this responsibility. Increased costs of higher education indicate that a wise father will begin early to set aside part of his income to meet this prospective financial burden. Some doctors may have already acquired property and are considering earmarking its income for the education of their children. By retaining ownership of the property, the income that is not tax exempt will be taxed to them. The amount of income retained by the doctor, after income taxes have been paid, will depend upon his income tax bracket. The doctor whose top federal income tax bracket is 50 per cent, retains only 50 per cent of the property's net income after taxes. This is based upon the assumption that the property's net income falls within the top tax bracket. No doubt the doctor in this case would like to reduce the tax on such income. He could transfer the property to those of his children in lower income tax brackets. However, the idea of permanently giving away property does not appeal to those persons who feel that their property holdings may be needed for their future security. A short term trust may provide the answer.

The short term trust has two objectives, tax-wise. One is to divert income from a high bracket taxpayer to one in a lower bracket. The other objective is to eventually return the trust property to that person who made the transfer into trust, thereby restoring to him the property and its income.

There are many variations as to how a short term trust can be operated which will prevent the income

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from being taxed to the grantor. One form may be as follows:

A doctor creates a trust naming his child as beneficiary and himself as trustee. Property owned by the doctor is transferred to the trust. The trust is to end 10 years after the transfer of the property or the death of the beneficiary, whichever occurs first—the lapse of time can be no less under the Internal Revenue Code unless the trust income is for a charity. Upon the trust's termination, the property is to be returned to the doctor. As trustee, the doctor may, in his discretion, accumulate the income from the trust property or distribute it to the beneficiary. Any current or accumulated income of the trust must be distributed to the beneficiary or the beneficiary's estate when the trust is ended. During the time the trust is in existence, the doctor, as trustee, may sell or trade the trust property and reinvest the proceeds for the trust's benefit. However, the doctor cannot deal with the trust property in a non-fiduciary capacity, such as selling or trading the property for less than adequate consideration. Neither may the doctor have the power to change beneficiaries or the amount the beneficiary is to receive. Support and maintenance of the child, which the father is legally obligated to provide, cannot be paid out of the trust income. To the extent the trust income is so used, it will be taxed to the father.

Assume the doctor accumulates the trust income during the entire period of the trust at the rate of \$1,000 per year before federal income taxes. Annual federal income taxes would be \$180, leaving \$820, or \$8,200 over the 10-year term of the trust. Had the doctor retained ownership in the property, assuming his top tax bracket was 50 per cent, only \$5,000 would be left to use for his children's college education.

Placing property in short term trusts creates gift tax problems. While the Internal Revenue Service has not stated how it would value such a transfer, the rule seems to be, in the case of a ten-year trust, that there is a gift of 30 per cent of the total fair market value of the property transferred.

Should the doctor die while the trust is still in existence, the value of his interest in the trust property would be included in his estate.

The short term trust does offer an opportunity to save income taxes for the family unit, but care must be taken in drawing the trust instrument to avoid taxing the grantor on the income of the trust property and thereby losing the tax savings.

A trust may be used in another manner to save taxes or, more correctly, to postpone taxes.

In the state of Montana a group of doctors formed an association to handle the affairs of a clinic. They

treated the association as being similar to a corporation and taxable as such. The doctors became employees of the association, receiving salary and bonuses. A pension trust fund was created, the association making payments to the trust on behalf of employees who had been employed by the association for three years and were over 30 years of age.

The tax advantages of a qualified pension trust arrangement are several. Payments made by the employer are deductible. The payments are not taxable as income to the employees until the trust actually makes payments to them. Income is not taxed to the pension trust, it qualifying as a tax exempt trust.

This means that when these Montana doctors reach retirement age they will receive periodic payments in accordance with the trust provisions. The doctors report the payments at that time. Generally, this results in payments being taxed in a lower income tax bracket than if the payments had been made to the doctor while he was still working.

But all was not tranquil. The income tax return of one of the association's doctors was examined by the Internal Revenue Service. As a result, the Commissioner of Internal Revenue ruled that association payments to the pension trust were taxable to the doctor to the extent of the doctor's share in the total payments. This was based upon the Commissioner's theory that the association was a partnership rather than a corporation. Pension trust provisions of the Internal Revenue Code cover only employees, and partners are not considered as employees. An alternate position of the Commissioner was that the Montana pension trust was discriminatory as to some clinic employees. It seems that under the trust provisions, few association employees, other than the doctors, qualified as participants in the pension trust plan. Contributions to a discriminatory pension trust are taxable to the employee at the time the employer makes them, if the employee has unqualified right to his share of the pension trust. A discriminatory trust is also not tax exempt.

The doctor took his case into federal district court and won. Appeal was made by the Commissioner to the Court of Appeals for the Ninth Circuit; however, the Court of Appeals followed the district court and held that the association was taxable as a corporation, the payments to the pension trust were deductible by the association, but not taxable to the doctor, and, the trust did not discriminate against certain employees.

The Court of Appeals further said that state law, prohibiting the incorporation of a medical practice, did not prevent an association of doctors from being taxed as a corporation where the association had many corporate characteristics.

In planning a pension trust many variations are

available. One plan might be to base the retirement payments an employee is to receive upon his average annual salary during the last 10 years of his employment. The total fund needed for all qualified employees is actuarially determined. Then the employer (association) makes present contributions to the trust in such amounts as will take care of the future retirement payments. This also can be actuarially determined. The possibility of creating an association taxable as a corporation merits exploration by clinical practitioners.

Because taxpayers often ask what they should do when a revenue agent comes to examine their returns, I will deviate from tax saving plans, as such, and suggest the following course of conduct for your consideration:

1. Be courteous to the examining officer. Make an attempt to provide adequate working space for him and have records and facts available which will conserve his time and your time.

2. Make arrangements with the agent, requesting that conferences be held at a minimum, thus conserving your time.

3. Carefully weigh statements made by the agent. Many times their statements are based on Bureau rulings rather than law.

4. Review all figures in detail.

5. Before signing any "proposed deficiencies or proposed overassessments" make sure that you fully understand the significance of such signing. By signing a proposed deficiency you lose your right of litigating the issues before the Tax Court and must pay the deficiency proposed. Upon payment of the deficiency you may file a refund claim, and if such claim is denied, then you may litigate the issues in the Federal District Court or the United States Court of Claims. The proper choice of courts can have a material effect upon the final conclusion of a case.

A field of taxation which has been grossly neglected is that of estate planning. Many false concepts exist as to what assets are properly includible in the federal estate tax return and subject to estate tax. It should be noted that all property held as joint tenants with right of survivorship is subject to estate tax in a decedent's estate to the extent that the decedent contributed funds to its acquisition. For example, assume:

1. All income derived by a husband and wife is earned through professional services rendered by the husband.

2. The husband and wife purchase a home and take title as joint tenants with right of survivorship (such as "John Doe and Mary Doe as joint tenants with right of survivorship").

3. The home is paid for out of the husband's earnings.

Under these conditions, upon the death of the husband, the entire fair market value of the home, less any liabilities, would be subject to estate tax. Under the foregoing assumption, the same principles would apply to any property, real or personal, which is held in joint tenancy with right of survivorship. It should be pointed out that by holding title in joint tenancy with right of survivorship the expense of probate, as to property so held, is usually eliminated. Whether property should be placed in joint tenancy with right of survivorship requires a complete analysis of one's assets and liabilities. An estate analysis will produce answers to various questions such as:

1. Are the objectives of the individuals concerned achieved?

2. Does the estate tax saving more than offset the probate cost?

3. Is proper recognition given to the marital deduction?

4. Is a devastating estate tax being created on the wife's estate, assuming the husband predeceases the wife?

It is not intended to imply that a minimum estate tax is the sole criterion of estate planning. A person's wishes and desires as to the devolution of his property should be fulfilled. However, it should be done with a maximum conservation of his assets. This can be done through proper estate planning.

One of the reasons that estate planning has been neglected lies in the fact that individuals fail to realize that many of the assets they have acquired now have an inflated value. They are prone to think in terms of "costs" rather than in terms of "fair market value." The estate tax is computed by applying estate tax rates against the fair market value of a decedent's assets as of the date of his death, or as of one year after his death. In estate planning one must think in terms of today's "fair market value."

Usually in income tax planning and estate tax planning, one is confronted with the problems of making gifts. A transfer of any property for less than adequate and full consideration may result in a gift which in turn could create liability for gift taxes. The amount to report for gift tax purposes would be the fair market value of the property transferred as of the date of the transfer.

Gift tax laws provide that the first \$3,000 given to any person by a donor during a calendar year, and subsequent calendar years, is not to be included in the total amount of gifts made for such year. Thus, Mr. A, a single man, could give as much as \$3,000 to R, \$3,000 to B, \$3,000 to T, etc., without becoming liable for filing a gift tax return or the payment

of gift taxes. In addition, the gift tax laws allow each donor a specific exemption of \$30,000. All this may be absorbed in one year or spread over numerous years. Thus, in a calendar year Mr. A may give \$3,000 to R, \$18,000 to S, and \$18,000 to T, without incurring gift tax. At this point Mr. A will have used his specific exemption (\$18,000 minus \$3,000 to R plus \$18,000 minus \$3,000 to T totaling \$30,000).

Mr. A's future gifts will be nontaxable only to the extent that a gift to a donee does not exceed \$3,000 in any one subsequent calendar year. Thus, Mr. A, after making the foregoing gifts, could in each calendar year thereafter make gifts of \$3,000 to R, \$3,000 to T, and so on, without incurring gift tax. To this point Mr. A has been considered as a single man. If he should be married, then additional exemptions are

available through the provisions relating to "split gifts" and "marital deduction."

Occasionally individuals are of the opinion that gifts during their lifetime are unnecessary since his or her surviving spouse can take advantage of the gift tax provisions. In part this is true; however, the surviving spouse, being single, can soon absorb her specific exemption, thereby incurring gift taxes on additional gifts. Under such circumstances gift tax brackets may quickly approach estate tax brackets. Thus, gifts by the surviving spouse become less desirable. By making gifts while both husband and wife are living, the advantages afforded by the gift tax laws can best be realized with a possible saving in income, gift, and estate taxes.

National Bank of Topeka Building
Topeka, Kansas

More Family Income through Mutual Funds

Clarence W. Glassen

Phillipsburg, Kansas

The statement that "There's nothing new under the sun" can be applied even to investment companies. The present modern form can probably be traced to Belgium in 1882. The idea germinated on the continent until the second half of the 19th century, when interest shifted to Britain. One of the earliest known British investment companies, The Foreign and Colonial Government Trust, was formed in 1868.

In 1875 Arthur Scratchley, noted British financial author, published *A Treatise on Associations for Provident Investment* describing about 20 English investment trusts that were in operation by that time. The objectives of these early investment trusts were similar to those of our present mutual funds. To quote Scratchley, they were "efforts to afford individuals the benefits arising from cooperative action in their investments and some protection against losses to which purchasers are exposed who buy stocks or general securities in an isolated manner—losses which they frequently do not apprehend until they subsequently find it necessary to realize at a time when some particular stock is depressed in value."

The trust "places the investor of moderate means on the same footing as the large capitalist by diminishing the risk of investment over a number of stocks."

"Each member would receive greater benefit with

much more security from loss by the distribution of the risk over a large average."

Securities purchased by these first investment companies consisted of bonds of British, colonial, and foreign governments and municipal bonds or bonds and debentures of railroads, telegraph and cable companies, gas and water utilities.

Each issue of investment company stock (some companies put out subsequent issues) was practically a fixed portfolio with no power of substitution or reinvestment. Each issue was to be liquidated at a specified future time such as 20 or 24 years. Actuaries had computed 24 years as ample time to afford good capital gains with comparatively high income.

These investment trust shares proved a satisfactory investment with good average income in spite of default of some of the bonds and debentures owned. Regrettably, some of the greatest defaults occurred on bonds of some of our southern states and of early American railroads.

In spite of economic disadvantages and the setback of two world wars, the English investment companies have profited by their world-wide investment, interlocking directorates of specialists in local and foreign economics, and 80 years of experience and improvement, and they are still a favorite medium of investment in Britain.

During the 1880's the investment company idea gained wide public acceptance in Scotland. The thrifty

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Scots took readily to the idea of pooling the savings of thousands of individuals, diversified their investments all over the world, and hired professional managers to handle the portfolio.

Of course under the Scots these investment companies were developed along conservative lines. They had income in mind above anything else. Since taxes in those days differed from the type of taxes we have in this country today, they would leave profits in the company, and some of them even held back part of the income to build up their reserves.

Most if not all investment companies in this country are taxed as regulated investment companies whereby income and realized profits are not taxed to the trust if fully distributed to shareholders. Therefore, it is important that shareholders of investment companies reinvest dividends and capital gains in additional shares unless they need it for current living expense.

The earliest investment company in this country was started in 1893 and was a family affair. This trust started with little more than \$100,000 and by now has built up to several million. The important thing about this trust is that it has paid dividends every year since its inception.

Some of the early trusts were too conservative to suit the speculative minded Americans, and this led to reckless creations in the early 20's. The public lost large sums of money through undue risks taken for quick profits that did not materialize.

During the last quarter of a century investment companies have become very popular, and much of this is due to voluntary and federal regulations and restrictions placed on them. The Securities and Exchange Commission was set up by Congress in 1934. Through its studies the Investment Company Act of 1940 was created and passed by Congress. Before a new investment company can begin business, it must have at least \$100,000 in net asset value. A diversified investment company may have no more than five per cent of its assets invested in any one security other than government bonds. Independent audits are required, and semiannual and annual reports are furnished shareholders.

The shares of the investment company must be registered with the Securities and Exchange Commission, but this registration does not carry its seal of approval. That is why the following is found on any prospectus, "These securities have not been approved or disapproved by the Securities and Exchange Commission nor has the Commission passed upon the accuracy or adequacy of this prospectus. Any representation to the contrary is a criminal offense." No attempt is here made to cover all that the Investment Company Act of 1940 embodies, since to do so would take several pages.

Since passage of the Investment Company Act of

1940, mutual fund distributors have made great strides in educating the public to the benefits to be received through diversified investment in many companies (not over five per cent in any one), selected by skilled investment advisors with continuous supervision. It would take practically all of any one investor's time to evaluate the changing status of stocks owned and of other good stocks, but diversified investment gives a greater return of income or greater probabilities of growth.

There are two types of investment companies, the closed-end and the open-end. The closed-end company does not issue new shares, its shares are usually listed on securities exchanges, and shares of these companies are bought and sold like any other securities. Open-end companies issue new shares to fill orders, but they must stand ready to redeem their shares at whatever their value may be at any time.

There are several kinds of open-end trusts. Some are diversified bond trusts, some are diversified bonds, preferred and common stocks, others are diversified common stock funds, and still others are diversified stocks of companies in the same industry.

Mutual investment funds are designed to fill the needs and desires of investors in every walk of life. An investor's purpose in acquiring shares of a mutual fund may be to satisfy a desire for any one or more of the following: to build an estate, to increase income, to educate children, to build a home, to travel, or for many other things.

An x-ray of a group of mutual fund investors discloses that they are small business proprietors, executives, office workers, professional people, manual workers, retired persons, churches, schools, estates, and many others.

Many investors, however, plan for their financial future with less care than they plan their vacation trips. When the Californian decides to drive east, or when the New Yorker starts out for the golden state, the first thing he does is get a road map and plan the route he intends to follow.

By planning an investment program through a

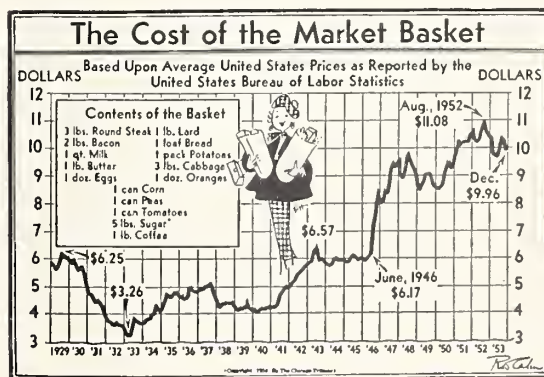


Figure 1

mutual fund which invests in a diversified list of securities, the investor gets the full benefit, as a shareholder, in all that the mutual fund does. He gets all of its net income, not just a predetermined amount. He gets profits when they have been realized, and these are not predetermined either.

The price of things you want to buy do not have a predetermined cost, as will be seen on the accompanying chart (Figure 1). Here is a list of groceries—the contents of a market basket. A pound of coffee, a dozen eggs, a peck of potatoes, or any other item in the basket is the same today as it was many years ago and will be in the future. Something is changing, so it must be the thing you are exchanging for what you want.

Another thing that does not have a predetermined value is the dollar, as shown in Figure 2. For the past 120 years, purchasing power of the dollar has

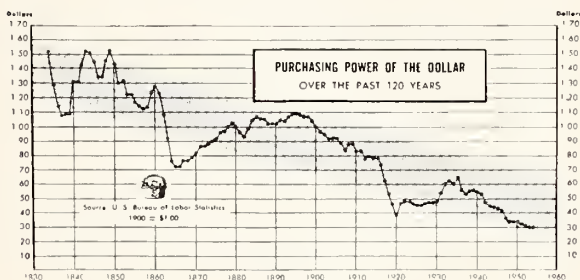


Figure 2

shown a downward trend. In almost every generation people who depended upon dollar savings alone, for retirement or other future uses, ended with less buying power than they thought they'd have. In 1900, for example, it took \$1.52 to buy what \$1.00 would have bought in 1834. And today you need \$1.86 to purchase what \$1.00 bought in 1939.

History shows that people who depend only on "fixed" dollars in planning their financial future are actually gambling that the buying power of the dollar will not decline. Mutual funds help people avoid this risk by planning an intelligent use of their money no matter what happens to the value of the dollar.

Figure 3 shows some figures on a mutual fund for the past 10 years. These figures were not predeter-

mined. One column shows the regular annual dividend income and one column shows the annual capital gains or profits realized. The figures show the 10-year result on an investment of \$1,000 in December 1944 and through to December 1954. While these are actual figures for the 10-year period, they should not be construed or accepted as the results to be accomplished in any future period since future periods may show less favorable or more favorable results.

Year	Regular Income	Capital Gains	Investment at 3%
1945	\$15.02	\$22.42	\$30.00
1946	28.19	26.53	30.00
1947	33.76	25.25	30.00
1948	41.17		30.00
1949	42.99		30.00
1950	42.38	19.35	30.00
1951	51.23	57.64	30.00
1952	43.92	64.94	30.00
1953	39.34	46.65	30.00
1954	38.41	62.21	30.00
Ten year Totals	\$376.41	\$324.99	\$300.00

Figure 3

A mutual fund is an investment company whose sole business is to invest its shareholders' money in a diversified list of securities and manage these investments for a fee. In my opinion a mutual fund is more than just an investment. It is an investment program whereby an investor receives several benefits:

He receives a quarterly dividend from many securities.

He receives capital gain distributions in those years when profits have been realized from sale of securities.

He has diversification of investment in many American industries. When he has additional funds to invest he doesn't have the worry of finding another; stock, bond, or mortgage; he can continue to increase his income by making additional purchases of the same mutual fund.

He has peace of mind with all of this since the securities have constant professional supervision.

Mutual Distributors, Inc.
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Kansas City, Missouri

The manifest destiny of America is to help the peoples of the world. . . . To do so, we must be bold and imaginative in our thinking. Abroad, we must be willing to accept a world filled with diversities and build our alliance with friends whose ideas we may not be willing to accept for ourselves. At home, we must practice the tolerance that the Bill of Rights champions. We must be willing to meet an idea at the level of argument and counter-argument.

—William O. Douglas

U. S. Savings Bonds—A Good Investment

George C. Rankin

Topeka, Kansas

The physician, the surgeon, the nurse, and the laboratory technician are people of more than average intelligence in whom rigorous training has developed special and valuable skills and informed judgment. It does not follow, however, that they are better judges of investments than the average citizen. That is why it is wise to consult men of informed, sound financial judgment when selecting investments.

The expert in the bank is concerned first with safety of the investment, second with its probable yield, and not at all with its likelihood of making the investor rich quickly. The banker does not recommend North Pole Gold Mines, Ltd., or Assorted Uranium, Inc. He would not pick up highly speculative stocks with a pair of tongs. The bright boys who use long distance phone calls, telegrams, direct mail, and personal calls to invite professional people in on the ground floor of a sure thing are careful to stay away from bankers. Lists of doctors, dentists, and other professional workers can be copied out of the local telephone book—and that is where the sellers too often strike pay dirt.

The wise investment counselor recommends what he calls "a diversified portfolio" made up of life insurance, sound common stocks including the "blue chips," and U. S. Savings Bonds. This article will discuss the investment values of Savings Bonds.

First and foremost, these bonds are safe. The principal and interest are guaranteed by the United States Treasury, which has never failed to pay its obligations in full since Alexander Hamilton established that policy. After the Revolution, the bonds of the young republic were selling on the market at a fraction of their face value, and there were advocates of paying them off at the market price. The first Secretary of the Treasury was firm against this. His action set up the credit of the United States at home and abroad, and that policy has never been changed.

Savings Bonds are not subject to market fluctuations. You can look on the back of the bond and tell exactly what it will be worth and what interest it will pay throughout the life of the bond.

If Savings Bonds are lost, stolen, or destroyed, the Treasury will replace them. This makes them safer than currency. In time of need it is easy to convert E bonds into cash, once they are two months old. Series H bonds can be cashed at par—exactly what

you paid for them—at any time after six months from issue date, on one month's written notice. H bonds, in denominations of \$500 to \$10,000, are investment bonds for a long term. To get cash for an E bond after two months from issue date is simply a matter of walking into a bank with the bond and proper identification.

There is no point in buying E bonds with money that should be in your savings account or checking account at the bank—money that you expect to check out within a few weeks or months. Putting into E bonds surplus cash that you *might not* spend may help you to save it, of course. Most people think twice before cashing a bond.

The E bond, selling at 75 cents for each dollar of maturity value, is designed to reward those who hold their bonds. The yield rises with each half year until at maturity, 9 years and 8 months from issue date, it is 3 per cent, compounded semiannually, for the whole period. All maturing E bonds may be automatically extended for up to an additional 10 years at the 3 per cent rate compounded semiannually, accruable each six-month period. At the end of the extension period, the cash value will be 180 per cent of the purchase price. That figures out slightly above 4 per cent simple interest over a 19-year-and-8-months' period. Where else can you find a completely safe and sure investment yielding 4 per cent for nearly 20 years? (On E bonds issued from May, 1941, through April, 1952, the yield is slightly less.)

The over-all yield plus safety has caused millions of bond owners to hold onto almost three out of every four dollars worth of E bonds that have matured so far. The sum of these retained bonds was nearly \$13 billion in mid-1955, or about one-third of the total holdings of E bonds. Since all of these holdover bonds had been held from 10 to more than 14 years, the result indicates a lot of satisfied investors who had plenty of time to think it over.

The tax saving feature of E bonds is attracting many investors and is undoubtedly an important factor in the fine acceptance of the automatic extension privilege. Being so-called "discount" bonds—increasing in value each six months—income taxes on the increase need not be paid until the bond is cashed. Many people are holding the bonds until retirement when it is generally assumed they will drop to a lower income level, and at age 65 attain the double exemption privilege. Tax savings on bonds cashed

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under the combination of these two conditions can represent quite an item.

If you cash an E bond before it is six months old, you are giving up an investment yield of 3 per cent to maturity on the amount of money you would get back—which at that point is just what you put in. The yield and the cash value rise each six months thereafter until in the period between 9 and 9½ years the yield reaches 4.94 per cent. It really pays to hold those bonds, even though the interim rate was greatly increased in 1952.

The Series H bond, sold since mid-1952, is a practical twin of the E bond except that it pays interest by check each six months instead of adding the interest to the cash value as the E bond does.

Series H bonds are a particularly good investment for those who are looking forward to retirement and for those who for any reason want current income from an investment. The postman brings the interest check twice a year. The response of investors to the H bond offering is gratifying to the Treasury. Sales are mounting steadily, and redemptions are low.

At this point it is perhaps prudent to examine the Series H bond more closely in view of its relative newness. The Series H current income bond first became available in 1952. It was developed as a companion piece to the Series E bond, the big difference being that the holder of a Series H bond receives an interest check from the Treasury each six months, whereas the interest on a Series E bond accrues and is added to the purchase price each six months. Generally speaking, the average productive person may find the accrual aspects of the E bond more appealing, where an older person, or a retired person, might find the current income feature of the H bond desirable.

The Series H bond is issued in denominations of \$500, \$1,000, \$5,000, and \$10,000. It is priced at par and redeemable at par after six months. It matures in 9 years, 8 months from issue date and provides an investment yield of 3 per cent when held to maturity. The Series H, like the Series E, may be owned by individuals only or by personal trust estates. Limit on both series per year per individual is \$20,000 (actual value on Series H; maturity value on Series E.) Husband and wife can buy \$40,000 per year, and children can be included, increasing the limit by multiples of \$20,000 per child.

Savings Bonds have already provided many things for millions of Americans and will continue to do so in the years ahead. The tried and true system of real savings is regularity. A regular investment in Savings Bonds may seem small at the time, but before long the total accumulation can be a welcome surprise.

From such savings come college educations for children, new homes, travel abroad, and happy retirement. Just as important is the ability provided by a backlog of Savings Bonds to meet unforeseen emergencies and unexpected illness.

There is an "extra bonus" to the buyer of Savings Bonds which may be easily overlooked. That bonus stems from the fact that in buying Savings Bonds one is lending a real helping hand to his government in its debt management problems and the maintenance of sound money. Treasury Secretary Humphrey has said about the Savings Bonds program, "Nothing is more important in the Treasury's plans and few things are of greater significance in our whole economy than the Savings Bonds program. It is vital both to constructive management of the debt and the maintenance of sound money."

Nations may win wars and then succumb to the ravages of uncontrolled inflation. The purchase of Savings Bonds by individuals is a highly effective non-inflationary method of debt management. The government's main source for borrowing money comes from individual Americans and through our banking system. Because of the peculiarities of monetary and credit effects, funds borrowed by the government from the banking system create new money, thus adding to inflationary pressures, whereas funds borrowed from individuals have the reverse effect.

When the government borrows money from the people by selling them Savings Bonds, it receives the money to spend for defense and other necessary costs of running the government. The people have the bonds, which are good investments and a safe way to put money to work to earn interest until it is needed. In that kind of borrowing, there are the same number of dollars in circulation after we have bought the bonds as there were before. We have the bonds—the government has the dollars. That is non-inflationary because there has been no increase in the money supply.

Now if individual citizens do not put their savings into government bonds either directly—as one does

SAVE EACH MONTH	AND YOU WILL HAVE				MATURITY VALUE, 9 years and 8 months from issue date	EXTENDED MATURITY VALUE, 19 years and 8 months from issue date
	In 1 year	In 5 years	In 9 years & 8 months	In 19 years & 8 months		
\$ 37.50	\$ 451.20	\$ 2,365.20	\$ 4,913.40	\$ 11,841.00	\$ 5,800.00	\$ 15,892.24
75.00	902.40	4,730.40	9,826.80	23,682.00	11,600.00	31,784.48
150.00	1,804.80	9,460.80	19,653.60	47,364.00	23,200.00	63,568.96
375.00	4,512.00	23,652.00	49,134.00	118,410.00	58,000.00	158,922.40

UNITED STATES SAVINGS BONDS—SERIES E
TABLES OF REDEMPTION VALUES AND INVESTMENT
YIELDS DURING ORIGINAL MATURITY PERIOD

(Based on a \$100 Bond, issue price \$75)
Bonds issued May 1952 and after

Period After Issue Date	Redemption Value during each half- year period	Approximate Invest- ment Yield on pur- chase price from issue date to beginning of each half-year period
		Per cent
First ½ year.....	\$75.00	0.00
½ to 1 year.....	75.40	1.07
1 to 1½ years.....	76.20	1.59
1½ to 2 years.....	77.20	1.94
2 to 2½ years.....	78.20	2.10
2½ to 3 years.....	79.20	2.19
3 to 3½ years.....	80.20	2.25
3½ to 4 years.....	81.20	2.28
4 to 4½ years.....	82.20	2.30
4½ to 5 years.....	83.60	2.43
5 to 5½ years.....	85.00	2.52
5½ to 6 years.....	86.40	2.59
6 to 6½ years.....	87.80	2.64
6½ to 7 years.....	89.20	2.69
7 to 7½ years.....	90.60	2.72
7½ to 8 years.....	92.00	2.74
8 to 8½ years.....	93.60	2.79
8½ to 9 years.....	95.20	2.83
9 to 9½ years.....	96.80	2.86
9½ to 9 years and 8 months.....	98.40	2.88
Maturity Value (9 years and 8 months from issue date).....	\$100.00	3.00

by buying Savings Bonds—or indirectly—through such media as life insurance companies, pension funds, etc.—then the government must get the money it needs to make up deficits or to meet refunding requirements of maturing obligations from some other

UNITED STATES SAVINGS BONDS—SERIES E
TABLE OF REDEMPTION VALUES DURING OPTIONAL
EXTENSION PERIOD

(Based on a matured \$100 Bond)

Period After Maturity Date	Redemption Value during each half-year period	
	On Bonds matured May 1951- April 1952	On Bonds matured May 1952 and after
First ½ year.....	\$100.00	\$100.00
½ to 1 year.....	101.25	101.50
1 to 1½ years.....	102.50	103.00
1½ to 2 years.....	103.75	104.50
2 to 2½ years.....	105.00	106.00
2½ to 3 years.....	106.25	107.60
3 to 3½ years.....	107.50	109.20
3½ to 4 years.....	108.75	110.80
4 to 4½ years.....	110.00	112.40
4½ to 5 years.....	111.25	114.00
5 to 5½ years.....	112.50	115.80
5½ to 6 years.....	113.75	117.60
6 to 6½ years.....	115.00	119.40
6½ to 7 years.....	116.25	121.20
7 to 7½ years.....	117.50	123.00
7½ to 8 years.....	120.00	124.80
8 to 8½ years.....	122.67	126.60
8½ to 9 years.....	125.33	128.60
9 to 9½ years.....	128.00	130.60
9½ to 10 years.....	130.67	132.60
Extended Maturity Value (10 years from original maturity date).....	\$133.33	\$134.68

Investment Yield: Approximately 3 per cent for each half-year period on bonds matured May 1952 and after. Bonds matured May 1951-April 1952 earn simple interest on the face amount, at the rate of 2½ per cent, if redeemed during the first 7½ years and thereafter at a higher rate sufficient to provide an aggregate return for the 10-year extension period of about 2.9 per cent compounded.

source. Such other sources result in an increase in the money supply without a corresponding increase in consumer goods.

This is a complicated subject, but the thing to remember is this: When we buy United States Savings Bonds we are lending the government money in a way that does not produce inflation, and each dollar we lend the government in this manner cuts down the number of dollars it has to borrow from sources which are inflationary.

So, when you buy Savings Bonds you not only are putting your money into the world's safest investment; you are also exercising a high degree of good citizenship. A financially strong and secure America is necessary to the safety and security of our homes and all our investments. Buying Savings Bonds applies a brake on inflation. They help to keep the value of our money stable. They aren't for gamblers who are looking for the "fast buck." Rather, they are for the man who is thinking ahead, thinking about

UNITED STATES SAVINGS BONDS—SERIES H
TABLE OF INTEREST CHECKS AND
INVESTMENT YIELDS

(Based on a \$1,000 Bond)

Period of time from issue date	Amount of each interest check	Approximate Invest- ment Yield from Face Value from issue date to each interest payment made
		Per cent
½ year	\$ 4.00	0.80
1 year	12.50	1.65
1½ years	12.50	1.93
2 years	12.50	2.07
2½ years	12.50	2.15
3 years	12.50	2.21
3½ years	12.50	2.25
4 years	12.50	2.28
4½ years	17.00	2.40
5 years	17.00	2.49
5½ years	17.00	2.57
6 years	17.00	2.63
6½ years	17.00	2.69
7 years	17.00	2.73
7½ years	17.00	2.77
8 years	17.00	2.81
8½ years	17.00	2.84
9 years	17.00	2.87
9½ years	17.00	2.89
9 years and 8 months	17.00	3.00

The Series H Bond provides a safe investment with no risk of market fluctuations. It is sold at par and is cashable AT PAR at any time after 6 months from issue date, on 1 month's written notice. It pays interest to provide an ascending rate of investment return each 6 months with an over-all yield of 3 per cent, compounded semiannually for 9 years and 8 months.

The postman brings the interest check each 6 months.

his wife, his family, and the uncertainties of the future. There are many such men in America, as evidenced by the fact that some 45 million individuals own Savings Bonds in record amounts. Series E and H holdings of approximately \$40 billions is an all-time high, higher than at any time during World War II.

Where do you buy Savings Bonds? Banks issue them without charge to either the purchaser or the

government, thus performing a fine public service for both the government and their customers. Generally banks will also provide the automatic Bond-A-Month service wherein the customer authorizes the bank to charge his account monthly for the purchase price of a bond. This can be an attractive service to professional people who do not have the payroll savings plan available.

There is a prominent place in almost any investment portfolio for Savings Bonds. Their stability and

absolute known values at all times can be a hedge against the possibility of having to dispose of other securities on a low market in case of emergencies. A solid base of Savings Bonds in your portfolio makes it easier for you to call the signals. Be a smart quarterback. If you wish to take a few chances, first be sure you are amply protected by the world's safest investment—United States Savings Bonds!

Federal Building
Topeka, Kansas

Life Insurance as an Investment

Pendleton A. Miller, C.L.U.

Topeka, Kansas

Doctors, along with other professional men, salaried men, wage-earners, and a large portion of businessmen, are constantly searching for some plan of saving and investing money that will provide safety and security for themselves and their families. The Road to Security has always been a rough and hazardous one to travel, and it has, perhaps, been made even more difficult by two world wars and the world's worst depression, all in a brief period of 40 years.

High income taxes and low interest rates, made artificially low by ever-expanding governmental needs, have greatly increased the difficulties. New inventions, new discoveries, wars, business recessions, drouths, floods, earthquakes, hurricanes, tornadoes, cold wars, and many other factors bring sudden and often dramatic changes in the investment problems that confront us.

Always, the safe investment of money has required eternal diligence, far-reaching knowledge and experience, and, as one man put it, "The gift of prophecy, which few people have."

For more than 100 years, life insurance has been increasing in popularity as an investment, and primarily this article will discuss the investment aspects of life insurance. Protection against premature death will be given little consideration.

Doctors have higher than average incomes, but little time to give to problems of selecting suitable

investments. Naturally most of them are interested in a simple, fool-proof plan, which, once it is started, requires little future management, time, or attention. For these reasons and for many others, thousands of the most successful doctors in America have become increasingly interested in life insurance as an investment.

We will show how it is possible, when you retire, to receive entirely tax-free an income of \$9,000 a year from an investment in life insurance. You will then need investment income. You do not need it when you are at the height of your earnings from your profession, when any investment income you may receive will be taxed at the highest income tax bracket, both federal and state.

LIFE INSURANCE AS PROPERTY

First let us consider a few facts which justify the use of the term "investment" when we speak of life insurance. Property and investments are many things to different people. Property to a farmer usually means farm land, machinery, and livestock. A merchant thinks of a store of merchandise, fixtures, and a building. A manufacturer wants a factory with machinery, inventory, and working capital. If a business enterprise is large, it may secure working capital by issuing mortgages, bonds, preferred and common stocks. A professional man, businessman, salaried man, or wage-earner may think of a home or any of these other types of property.

Life insurance is also property. It is all types of good property combined in one certificate of title,

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commonly called a policy. It is cash in the bank, government and other bonds, farm lands, factories, stocks in America's leading corporations, business buildings, apartment buildings, and homes. It is a diversification of investment through one large life insurance company, so that \$100,000 in cash value means the investment of \$10 in each of 10,000 carefully selected, different pieces of property.

GUARANTEES VS. PRESUMPTIONS

Any study of life insurance as an investment should include a comparison with other types of investments. But actually there is no satisfactory basis for comparison. Life insurance property is full of guarantees, whereas we can only assume or hope that other forms of property will do certain things. There is no guarantee they will do so. Most investors would gladly pay a premium if they could get the same guarantees attached to the title of their other investments. We can contrast life insurance with other forms of property, and we can argue about the merits of different features, but we cannot compare a guarantee with a presumption, a certainty with a hope.

There has never been a failure of a large, well-established life insurance company, and this cannot be said of any other type of investment. Life insurance provides either a single sum investment, or a systematic installment accumulation plan over a period of years, or, if desired, over the working lifetime—and the results are guaranteed.

Life insurance is the only property which guarantees that our investment will accumulate at compound interest, free from taxes of all kinds during our entire lifetime. It increases in cash value each year, even though no further investment is made.

Life insurance is the only property which guarantees a definite sum of cash at an indefinite future time—just any time you want to call for it, 10 years, 23 years, or 43 years from now—the only property with a guaranteed cash value in the event of a depression or a panic.

A LIQUID INVESTMENT

One of the most desirable qualities of any investment is liquidity. Life insurance has a liquidity which is peculiar to it alone. In spite of this fact, it is usually the last resource the average man is willing to surrender. Even at great personal sacrifice, he continues to pay his premiums. This means that there will be a steady flow of cash in the form of premium income paid to a life insurance company in bad as well as in good years.

Records show that during the depression years 1930 to 1932, life insurance companies of America paid policyholders and beneficiaries \$6,169,900,000; during these same three years, the companies re-

ceived \$7,586,082,000 in premium income alone. Income from investments was \$2,195,116,000, giving a total income of \$9,781,198,000. Even during these abnormal times, the total income of the companies was \$3,611,298,000 larger than the amount needed to pay policyholders their cash values and beneficiary payments. In normal times the margin of liquidity is far greater.

In September, 1929, the aggregate value of common and preferred shares listed on the New York Stock Exchange was approximately \$90 billion. The assets of the life insurance companies of America were \$18 billion.

Less than three years later, the market value of these same securities was approximately \$16 billion, and life insurance assets were over \$21 billion. This was a decrease of \$73 billion for the stock market and an increase of \$3 billion for life insurance, with life insurance assets on June 1, 1932, worth \$5 billion more than securities on the stock exchange.

During this period the market value of listed bonds dropped from \$47 billion to \$32 billion, from an average of \$97.50 to an average of \$77.27, a loss of over 20 per cent.

INSURANCE GUARANTEES

Life insurance is the only property that guarantees a regular income every month as long as we live after we retire.

There is one sure thing—we don't have to buy an afternoon paper to find out how much our life insurance is worth.

We may make an investment in real estate, a common stock, or a mutual fund, believing, or at least hoping that it will increase in value. In the meantime we may believe, or hope, that it will pay a satisfactory yield on our investment. But no other investment is guaranteed to increase in value and none guarantees an income except bonds and mortgages, and the yield on them is small. Only U. S. Series E and G bonds have guaranteed cash values. Even U. S. 4¼ per cent Liberty Bonds once sold on the New York Stock Exchange for \$75 per hundred, and in recent years U. S. bonds have fluctuated as much as 10 per cent in market price.

Life insurance is the only property that guarantees to take care of us and our families if we are totally and permanently disabled during our earning years. This is true even though we may have made only a small down payment on the purchase price of the life insurance property we are buying. The disability feature not only waives future payments on the purchase price but, in addition, it pays an income of 12 per cent on the face amount. A \$25,000 policy pays an income of \$3,000 per year and also waives future payments, which increases the interest rate.

The income of 12 per cent on the face amount and the premium waived may be as much as 700 per cent yield on the investment made up to the time of disability.

A prominent actuary has stated that of 1,000 men, 32 will be totally disabled for at least 5 years between 25 and 60, and 22 will be totally disabled for at least 10 years. It is obvious, therefore, that disability is a real hazard in any investment program.

Life insurance is the only property that is guaranteed to increase in value at death. In event of death in the early years, it multiplies many times in value. Other forms of property shrink in value.

Also, the total received from a life insurance investment is guaranteed to increase 25 per cent to 30 per cent or more through the use of guaranteed installment and annuity options provided in the contracts, while at the same time providing important tax advantages and savings in administrative and settlement costs.

Only life insurance guarantees immediate transfer of property to heirs without deduction for administration expenses, legal fees, and state death taxes, and it is exempt from the claims of creditors. There is no loss of income while the estate goes through probate court.

LIFE INSURANCE A GOOD SPECULATION

Life insurance is a "sure thing," but it is also highly speculative. The speculative possibilities always work favorably to the investor, and never against him. In the event of premature death, the gain is frequently as much as 5000 per cent.

Another speculative possibility is the fact that it is the only property guaranteeing the privilege of borrowing money regardless of business conditions and regardless of the prevailing rates of interest. These cash and loan values are guaranteed at 5 per cent when other forms of property are being offered at perhaps as low as 50 cents on the dollar of their value. At such times money may be worth 50 per cent interest to snap up bargains, when banks may not or cannot make loans at any price.

This provides one of the best inflation hedges there is. Most investment fortunes have been made by those who have been smart enough and patient enough to accumulate cash for the buying opportunities that have always come at periodic times, due to deflation rather than inflation.

During business depression, when you may need money, everyone else also needs money—times of unemployment, low wages, and tight money. These are poor times to sell anything or to borrow money.

Many successful men say they have made more money from their life insurance than their families can ever hope to make. They have done this by using

the loan values of their policies to buy fine property which was being sacrificed by someone who was forced to sell for the lack of ready cash. Many also will report that they saved their firms or were able to go into business, through the guaranteed loan values of life insurance. Yes, many fine businesses have been saved from utter ruin because of the living values, as well as the death values, of life insurance.

There are speculative possibilities in other kinds of investments which do not exist in life insurance, but the records seem to indicate these speculative possibilities work against the investor more often than they work in his favor. A well-known speculator once said, "I hope to be right only 51 per cent of the time."

Life insurance guarantees a permanent, lifetime investment for a man and a lifetime investment for his family after he is gone. It eliminates the hazard of frequent reinvestment, and you don't have to worry about it, or give it a second thought. It is important to reduce, as far as possible, the number of investments which must be made, because one bad investment may wipe out the savings of a lifetime, or the profit of several good investments. If a bad investment is made at the end of a lifetime, the result is disastrous indeed. With life insurance available, there is no need for the average man to expose his savings to the hazard of frequent reinvestment. For the average investor it will do a better job than other types of investment.

PRINCIPAL AND INTEREST GUARANTEED FOR 100 YEARS

Life insurance is the only property which will guarantee a definite, fixed income to a wife and children, and even to grandchildren, if we desire, as long as they live, even though they may live to be more than 100 years of age. Both principal and interest are guaranteed long after we are gone, far into the future. It guarantees to pay a definite lump sum of money to such people at such time and in such a manner as we may designate, even after wife, children, and grandchildren are gone.

Life insurance property also provides a tax-free income up to \$1,000 per year when the proceeds are payable to a widow or widower under the installment or annuity settlements guaranteed in the policy (1954 Tax Law).

Life insurance can be bought in any convenient amount with a small down payment and with any payment method we desire, but we can stop payments at any time and have full title to the part of the property we have paid for. A \$50,000 20-pay life policy with 10 premiums paid is guaranteed to be fully paid-up for more than \$25,000. With 5

payments made, it is fully paid-up for more than \$12,500.

A 20-year endowment of \$100,000 with 5 premiums paid is fully paid-up for \$27,000. With 10 premiums paid, it is fully paid-up for \$53,000. It will pay an annuity of 10 per cent at age 65 on the net amount of premiums paid during the 5- or 10-year period. Furthermore, the annuity may start at any time you choose. You do not have to wait to age 65.

Dr. Solomon S. Huebner, of the Wharton School of Finance, who has devoted his life to the study and teaching of property and human life values, and to insurance of all kinds, says that life insurance gets a 100 per cent rating on all the attributes of a good investment, and that no other one investment does so. Among these attributes, he lists:

- Safety of principal.
- Reasonably large and certain income.
- Stability of value.
- Proper spread of risk.
- Possibility of speculative gain.
- Convenient denomination and purchase plan.
- Convertibility into cash or guaranteed loan value.
- Limited taxation.

It is human life value that gives value to all other property. Man is the all-important factor. Bonds and stocks put a capitalized value on the property of a corporation. A life insurance policy capitalizes the human life value of the individual. Man is actually property, and the most important property, in the world. A life insurance policy is merely the abstract of title or the deed which capitalizes this human life value.

The best inflation hedge is the ability to work. In times of inflation, wages, salaries, income from profession, and income from business go up along with the cost of living. So, the most practical inflation hedge, as far as our families are concerned, is an increased investment in life insurance which will provide the necessary funds to take care of the cost of living, whatever it is, for our family in event of our premature death.

For instance, take 66 individuals who became policyholders of one large company in 1950, and who also met death in their first policy year. They paid this company about \$14,000 in premiums, and the company paid their families a total of \$555,000, or nearly 40 times the amount of the premiums. You don't suppose that any of the beneficiaries felt that their husbands or fathers had made an unwise investment, or complained because they were paid in 50-cent dollars, do you?

If you argue these are extreme cases—let us examine the entire 3,165 death claims incurred by this same company last year. We find these policyholders had paid in some \$16,000,000 in premiums. Their

policies were in force an average of 22.6 years. In addition, they received \$3,000,000 in dividends, which reduced their premiums to \$13,000,000. Their beneficiaries received a total of \$23,000,000. This means simply that the company paid out more than \$1.60 for every \$1.00 it received from these policyholders, and there was no income tax or transfer expense in getting these funds into the hands of their beneficiaries.

Through the annuity principle, life insurance dollars will pay a guaranteed income as high as 10 per cent or more on the total premiums paid, and the policy guarantees to do so. No other investment can offer the annuity principle, so no other investment can offer this highly desirable inflation hedge.

Life insurance dollars are always emergency dollars, guaranteed to be available at a time we need them most. They have a purchasing power far greater than an ordinary dollar. Life insurance is generally bought with 50-cent dollars by men and women who are at the height of their earnings, and it goes to work for them when each dollar is worth \$3 to \$5.

A dollar is worth just a dollar to a housewife shopping for a large family, but it is worth \$3 to an old man who has received his last pay-check, and \$5 to a widow with a large family. It doesn't make much difference to a widow whether her husband's life insurance was brought with inflation or deflation dollars—provided he left enough life insurance.

Premiums paid for a life insurance policy over a long period of years will be average dollars. Some of them will be cheap dollars, some of them will be high-priced dollars, but only a small per cent of the total investment is made in any one year, unless the policyholder dies prematurely, so we have a fine hedge against both inflation and deflation.

155 YEARS OF INFLATION AND DEFLATION

After every major war there have been sharp inflations, followed in a few years by deflation. This is clearly shown in the cost of commodities for the last 155 years. The record shows that inflations never last a great many years and that deflations are always much more rapid and severe.

The one fact which stands out most sharply regarding inflation is that it has always been temporary. When it exists, it seems that it will never end, but the record is all against that view.

Always in the past there have been plenty of so-called authorities who predicted that things were different and history would not repeat itself, but it always has. Even in 1946, after the current inflationary movement was well started, a dollar would still buy one-third more than it would buy in 1920, which was the peak of inflation after World War I.

Judging from past history, we need deflation

hedges far more than we need inflation hedges. Dr. W. A. Irwin, economist of the American Bankers Association and formerly professor of economics at Washburn University, has compiled a table based on Bureau of Labor Statistics Index of Wholesale Prices (1926 base year shifted to 1800) and inverted to show change in value of the dollar since 1800.

This table shows there were only 21 years prior to 1942 when the dollar would not buy more than 100 cents worth of other property. Before 1942, the longest period of time that a dollar was worth less than a dollar in purchasing power was a period of 8 years from 1810 to 1818 inclusive, due to the War of 1812.

TAXES, YIELD AND LOSSES

There are many things to consider when we weigh the value of any investment, but two great changes have taken place in recent years that have created a "two-horned dilemma" for the average man in attempting to accumulate enough capital to provide adequate security for himself and his family. These two changes are high income taxes and low interest earnings on conservative investments. The advantage of life insurance as an investment, or for the purpose of creating an estate, has been greatly increased by these two changes.

Roswell Foster Magill, nationally known tax expert and former advisor to the Federal Board of Economic Planning, said, "Income taxation is the principal factor preventing the accumulation of an estate of any size. Life insurance is the average man's best hope of enlarging his estate. It will not only assure him the addition of compound interest to his savings, but interest free of taxation to him."

Many investors talk about the high yields they receive on real estate, common stocks, taxable bonds, and other investments, but most of them forget to take into consideration the effect of high taxes on their dividends.

Let's suppose a doctor who is married has some surplus to invest, and decides to buy a conservative 3 per cent bond, perhaps a corporation or U. S. government bond. How much will he be able to keep on the next \$1,000 of income? This is what would happen:

<i>Income, Doctor and wife</i>	<i>Keep</i>	<i>Yield</i>
\$12,000	\$700	2.22%
20,000	620	1.98%
50,000	410	1.23%

However, the state of Kansas will also want a slice on most investments, and there may be some investment expense.

Interest of 5 per cent or 6 per cent before taxes becomes a yield of only 2 per cent or $2\frac{1}{2}$ per cent in the case of those who have incomes of \$50,000 a

year or more—and only $2\frac{1}{2}$ to 3 per cent for those who have incomes of \$25,000 per year.

What's the use of taking a 5 per cent or 6 per cent risk for less than 3 per cent on your money after taxes? Many leading investment houses regularly issue non-taxable bond lists and stress how wise it is for high-income individuals to buy tax-exempt city and state bonds yielding only 2 to 3 per cent interest.

Interest of 5 per cent or 6 per cent is a poor return if we lose part of our capital from time to time. It was Will Rogers—or was it Eddie Cantor—who expressed so well what millions of men have learned from hard experience, "I am no longer interested in the return *on* my money. I am just interested in the return *of* my money."

A loss of \$10,000 capital may mean an actual loss of \$15,000 or \$20,000 that was earned before income taxes were paid. To replace this loss, we have to earn another \$15,000 or \$20,000. So, actually, we have lost \$10,000 plus a lot of past taxes plus a lot of future taxes—a total loss of more than \$30,000 in the highest income tax brackets. Over a period of years there are usually some capital losses. Even if an investor is unusually successful, his net yield will not likely average more than 2 to $2\frac{1}{2}$ per cent.

RE FOR A DOCTOR'S INVESTMENT HEADACHE

With life insurance, it is possible to invest money at compound interest tax-free for many years, and then collect an entirely tax-free income of over \$9,000 per year after age 65.

A prescription for the typical successful physician might go something like this:

Buy enough life insurance to provide minimum security for the family. Then, when there are surplus funds to invest, buy retirement income policies from time to time, sufficient to provide an income of \$6,000 to \$9,000 a year after age 65.

Let's assume that from age 40 to age 65, an annual investment of \$3,600 is made. The following figures include dividends which are not guaranteed but are on a conservative basis:

Results at age 65

Cash Value	\$119,338
Total Invested	90,000
Income per year for life	8,895

If he and his wife are both age 65, this entire income is free from income tax and is guaranteed to the doctor as long as he lives; a further guarantee provides that if he does not live for 10 years, the checks will be paid for the balance of the 10-year period to his beneficiary.

If, when he is age 65, his wife should not be living, or if he feels she is well provided for in other ways, and if his children are well provided for

in other ways, he may elect to receive a straight life annuity of \$9,756 per year.

He will have other life insurance policies payable to his wife if she outlives him, but if he wishes to provide additional security for her, he may use one of the following options:

\$7,850 per year for life guaranteed for a minimum 15 $\frac{1}{3}$ years, or

\$7,046 per year for life guaranteed for a minimum 20 years, or

Joint and survivorship annuity settlement payable as long as either he or his wife lives, or

Any of several other income options.

The tax advantages are tremendous. The guaranteed options available 40 or 50 years in the future are almost unbelievably good and are available in no other investment in the world.

Let's compare this with an income of \$8,895 from ordinary investments:

Investment	Rate	Income
\$222,375	4 per cent	\$8,895
296,500	3 per cent	8,895

With this income from ordinary investments, he and his wife would have the following income tax and spendable income:

Exempt from income tax	\$3,290
Income Tax (after \$240 credit)	913
Spendable income	7,982

At 2 $\frac{1}{2}$ per cent compound interest above income taxes, losses, and investment expenses, \$8,468 invested each year for 25 years would accumulate \$296,500.

A recent survey shows that the average doctor has an annual income of \$15,000, so his situation is approximately as follows:

Annual income	\$15,000
Net income after taxes	12,000
Living expenses, perhaps	7,000
Life insurance premiums, perhaps	1,400
Investable income, perhaps	3,600

At 2 $\frac{1}{2}$ per cent an investment of \$3,600 a year accumulates \$126,000 in 25 years. This amount invested in 3 per cent bonds yielding perhaps 2 $\frac{1}{2}$ per cent after taxes would provide an annual income of \$3,150.

IN GRANDFATHER'S DAY

In grandfather's day—"the good old days"—6 per cent simple interest and 4 per cent compound interest were the rule. First mortgages and building and loan associations paid 6 per cent compound interest, bank savings accounts paid 4 per cent compound interest, and government bonds paid 4 $\frac{1}{4}$ per cent. Grandfather kept the interest as he had no income taxes to pay. The cost of living was low, so he

could retire on \$200 a month, and \$9,000 a year was unusual.

The income taxes paid by the average doctor today compounded at 5 per cent would amount to a fortune in 30 years. Taxes on a \$15,000 income accumulated for 30 years would give a fortune of more than \$200,000. On a \$30,000 income these taxes with interest would accumulate a fortune of more than \$500,000.

In grandfather's day, an income of \$8,895 a year could be secured from an investment of \$148,250 at 6 per cent interest. But even at 4 per cent compound interest, he had to save \$3,423 per year to accumulate that much money in 25 years. Few people in those days did accumulate enough money to retire, but it was possible, at least theoretically, to do so. A few professional men and some salaried men with high incomes did save and accumulate substantial estates through conservative and systematic investment.

It seems, therefore, that the old ideas of accumulating money and providing financial security for old age are a thing of the past. Now it is difficult even to figure out a theoretical method of providing security for our family and for ourselves, except by life insurance and annuities. Today with an annual saving of only \$3,600 per year in life insurance and annuities, we can "turn back the years" to those "good old days" when high interest rates and low income taxes required \$3,423 in annual savings for 25 years to produce the same spendable income of \$8,895 a year.

ANNUITY BENEFITS

We feel we should ask this question, "Why not let the annuity principle do for us to a certainty what 6 per cent interest was supposed to do for our fathers and grandfathers, but more often did not do?" Here is how it works:

Age 40	25 years	Age 65
1920's		Today
\$148,250	\$296,500	
6%	3%	
\$ 8,895	\$ 8,895	
\$3,423 per year then	\$8,468 per year today at	
at 4 per cent with no taxes	2 $\frac{1}{2}$ per cent after taxes	
to accumulate	to accumulate	
\$148,250 in 25 years	\$296,500 in 25 years.	

Retirement Income Annuity

\$3,600 yearly saving
to provide \$8,895 a
year at age 65.
Plus \$60,000 immediate
estate, increasing to
\$119,000 at age 65.

Why should a doctor try to save \$8,468 a year out of a \$25,000 income in order to accumulate enough

capital to live after age 65 in the manner to which he has become accustomed? Certainly he cannot do it with a \$12,000 net spendable income. Why not live well as we go along and provide security for ourselves and our families by an easy, certain method? Life insurance, combined with retirement annuities, will permit us to do so, and it is well illustrated by the story of two doctors.

First physician: "Doctor, I wish I could afford to belong to the country club, buy a new Cadillac each year, take my family on expensive vacation trips once or twice a year, and live in the finest part of town in a nice house, the way you do."

Second physician: "I don't see why you can't. You surely have as large an income as I have."

First physician: "Yes, I presume I do, but you have \$100,000 worth of life insurance, and I have only \$25,000. Unfortunately, I can't pass the examination for more life insurance, and haven't been able to do so for a good many years. Therefore, I have to save every dollar I can so that my family could live properly in event of my premature death. In the meantime, I must deny myself and my family many privileges we would enjoy and could well afford if only I could get additional life insurance."

So, an adequate life insurance program does not impose a burden. It is the best relief from a burden.

The annuity method uses the principal, but a man who is used to a large income would probably use his principal if it were invested in other ways. If a man has only \$119,338 accumulated, he will not be happy living on \$3,580 a year, which is what he would receive at 3 per cent in conservative investments—and after age 65 he would not want to risk any but conservative investments. If he dips into his principal, he reduces his income and will soon begin to worry for fear he may outlive his capital, as many a man has.

An increase in spendable income of \$5,300 a year provided by the annuity would enable a man to do many things for his wife and children while he is alive, instead of trying to exist on \$3,580 a year so he could pass on an additional \$119,338 to his heirs. He may give other property away and so reduce income taxes, estate taxes, and settlement costs. Living standards and the general welfare of the entire family are improved.

Besides, if he left this \$119,338 along with his other estate, there may easily be a shrinkage of 25 per cent—perhaps even 40 per cent or more, depending on the size of the estate—due to increased estate taxes, inheritance taxes, administration costs, and attorney's fees.

However, he is not required to use all of the capital when the policy matures, or any of it for that matter. There are many guaranteed combinations in

the retirement income policy which provide for every situation that may occur at retirement age. He may elect to leave part or all of the cash value with the insurance company on deposit at interest (3 per cent now being paid) and take the balance as an annuity. Following are two of many possibilities:

Plan	Option	Amount	Income
No. 1	Interest	\$119,000	\$3,576
No. 2	Interest	90,000	2,700
	plus Annuity	29,000	2,160
Total		\$119,000	\$4,860

If Plan No. 1 is used, there would be a taxable gain of \$29,000 at the time this option is selected. The 1954 Tax Law provides that this gain would be divided three ways, one-third in the year the option is selected and one-third in each of the two previous years. This would probably reduce the income taxes to be paid but it would not entirely eliminate them. The Internal Revenue Service, however, has provided a method whereby this tax problem may be avoided or postponed by giving up the right of surrender until a later date.

Plan No. 2 would avoid part of the income taxes. It would also preserve the \$90,000 of capital invested in the policy. Income taxes could be postponed by giving up the right to surrender the \$90,000 until a later specified date. They might be avoided altogether by giving up the right to cash in the \$90,000 at any time. In that event, the proceeds would be paid to the beneficiary at death. Any combination of cash withdrawals, interest income, and annuity settlements may be elected at the time of retirement or at a later date.

Furthermore, under the annuity option that pays \$8,895 a year, the capital will not all be used unless he lives to age 75. If he lives 20 years he draws \$177,900; in 30 years he draws \$266,850. If he takes the 20 years certain and continuous for life option, which pays \$7,045 a year, a minimum of \$140,900 is guaranteed. If he lives 30 years, it totals \$211,350.

In addition to the guaranteed income, there may be dividends during the years certain period of 10, 15, or 20 years. The amount, on the basis of present dividends, would aggregate \$6,023 under the 20-year option, making the total paid for the 20-year period \$146,923, as compared to the total of \$90,000 invested.

If a man is anxious to preserve his capital for posterity, a simple and practical method is now available through the purchase of life insurance, with the ownership vested in his wife and children. A wife may do the same thing for her husband or children if desired. Under the 1954 Tax Law, this would eliminate the proceeds from our estate and eliminate all

taxes and settlement costs. This is more effective than giving away any other property, because life insurance automatically increases the amount of the gift at death.

WHAT RATE OF INTEREST DOES IT PAY?

What rate of interest do you earn on your money when it is invested in life insurance? You realize that you get an extremely high return if you die prematurely, but you may not be convinced that you earn a satisfactory rate of interest if you live.

The investment brains of our large life insurance companies are the best that money can buy. They are also directors of large banks and other corporations, so they have first-hand information of great value. With hundreds of millions to invest each year, they have first choice of the best investments. Compound interest is entirely practical, and it is a reality, not a theory. Naturally the net yield on the assets of a well-managed company is better than an individual can obtain on similar quality. In addition, the policyholder gets the benefit of the interest earned on the company's surplus.

The better-managed life insurance companies have a yield after taxes, investment losses, and expenses of more than $3\frac{1}{2}$ per cent. This is better than the yield on high quality bonds, and since the all-important object of life insurance is safety, certainty, and security, the yield is a satisfactory one.

Who can determine what rate of interest your life insurance has earned, if it is the only thing you own when you are old or when you die? Is it 100 per cent, 1000 per cent, or just what?

SINGLE PREMIUM VS. INSTALLMENTS

Most buyers of life insurance are confused in their thinking regarding the interest earned on life insurance as an investment because they compare the so-called purchase price of other forms of property, bought with a single payment, with a life insurance policy bought on installment payments running over a period of 20 years or, in many cases, much longer.

If you buy a \$30,000 house and write your check for it, it will cost you \$30,000. If you pay for it over a 20-year period, it will cost you nearly \$48,000 not counting taxes and insurance. In spite of the fact that you pay \$48,000 you still think you bought a \$30,000 house, and if you sell it for \$36,000 you are proud of a \$6,000 profit. This is the usual reasoning on all types of property except life insurance.

When you buy a \$30,000 life insurance policy, you also have the choice of paying a single premium, which at age 35 would be \$16,195. The dividends for the first 20 years total about \$2,850, making the 20-year cost \$13,349.

However, if payments are made over a 20-year

period, you pay about \$23,340, and with dividends considered the net outlay is about \$18,210. The difference of \$5,130 is the cost of buying on installments, whereas the actual cost of the life insurance policy is still only \$13,349. When you buy a \$30,000 piece of life insurance property, you own an estate. When you buy any other form of property on installments you owe a debt.

A \$500,000 SINGLE PREMIUM POLICY

Here is an interesting true story told to the writer by a Wyomissing, Pennsylvania, businessman who, in 1928, thought he sensed some business troubles ahead. Since he was approaching retirement age, he decided to sell his business and stocks and his other investments and look around to decide what to do with the money.

Some of his local bankers recommended that he go to the city and talk to some of the investment experts. He did so and spent a good many hours with them. They wrote out their recommendations and advised him to invest \$313,030 in stocks of 12 of America's best-known corporations. He considered it carefully but decided instead to invest \$304,305 in a \$500,000 single premium life insurance policy.

In 1932 the market value of the securities recommended had shrunk to \$53,310, or 16.9 per cent of the recommended purchase price, and the life insurance had a cash value of \$311,000.

In 1938 the securities were worth \$120,908, or 39 per cent of the purchase price, and the cash value of the life insurance was then \$382,000, or 125 per cent of what he had paid for it.

We do not know the market value of these securities at the present time. It is a safe bet, however, if they have returned to the original market value of \$313,030, it has occurred only in recent months. There is no certainty these particular stocks have done so, as there are many stocks highly thought of as good investments in the "roaring '20's" which today are still selling for less than they did at that time.

In the meantime, he has had \$500,000 of guaranteed estate for his family if anything happened to him.

THE FINAL TEST

The final test, and the most important test, of any investment program is, "Does it work?" The fact that it does work is the most outstanding advantage in life insurance as an investment.

Not only does it work now, but it has worked for more than 200 years, starting with Mutual Legal Reserve Life Insurance in London. In fact, writing of life insurance more than 100 years ago, a London author declared,

"Life Insurance is notoriously the best invest-

ment that can be made. No other can combine so well the two great requisites—security and profit. In all the vicissitudes of politics and trade, in time of wild speculation and of disastrous panic, in the plethora of peace and exhaustion of war, life insurance investments have been uniformly safe and profitable. Of what other kind of investment can the same thing be said?"

The average man will earn a fortune in the 40 working years between ages 25 and 65.

<i>Annual Earnings</i>	<i>Total Earnings</i>
\$ 6,000	\$ 240,000
10,000	400,000
25,000	1,000,000

In spite of the fact that most men do earn a fortune in a lifetime, records show that of each 100 men age 65—

<i>Financial Situation</i>	<i>Number</i>
Financially successful	9
Public or private pensions	18
Still working	34
Charity	39

Only one man in 11 is financially successful. You wouldn't play poker if the odds were 91 to 9 against you.

The 1950 census showed 12,000,000 people over age 65.

5,700,000 were men

Only one-half had incomes of more than \$1,128 a year

One-third were physically unable to work.

A survey of the estates of doctors shows that one-third have estates of less than \$10,000 at the time of death.

With 40 years to earn and accumulate money, it is a pretty sad fact that only one man in 11 succeeds. Ten men out of each 11 "miss the boat."

Over a period of many years, the American people have invested less than 5 per cent of their income in life insurance, but repeated surveys, after excluding the estates of the few wealthiest people, show that 85 per cent of the property left "at the end of the road" is the proceeds of life insurance.

One dollar of every \$20 that the American people earn is invested in life insurance, but nearly \$19 out of every \$20 they have at the "end of the journey of life" is the proceeds of life insurance policies.

There are major exceptions, and it is interesting to note that these exceptions so often come to pass primarily because a man *happens to die* at the right time.

Too many men die when their luck is running against them. The estate of anyone who dies during

a "bear market" will almost always suffer additional losses through forced sale of property to raise money for taxes and settlement costs. Wealth, as well as time, has wings and flies.

One of America's wealthiest men, Andrew Mellon, once said, "It is more difficult to keep money than to make money."

If you want to die wealthy, one of the best things you can do is to die at the right time. The writer grew up in a city in Kansas, where there were two banks that ranked in the top 5 in size in the state. The president of one of these banks died a millionaire during the 1920's when everything was booming. The president of the other bank lived too long. He was also a millionaire during the roaring '20's, but his bank failed in the '30's and he lost everything except the cash values of his life insurance policies. In an effort to save the bank, he speculated in the stock market, with the result that he had further losses which caused his bank to become even more insolvent.

The other bank also failed, but the president had been smart. He died while he was still rich.

STORY OF A ROTARY CLUB

One of the most interesting stories we have read is the story of a Rotary Club organized in 1916 with 24 charter members. They were carefully selected, successful men in a wealthy city of about 75,000 population. Twenty-five years later a man who was interested in research checked up to see what had happened to these 24 men. This is what he found:

- 16 were still living
- 1 was rich
- 2 still successful business men
- 2 old and retired comfortably
- 1 retired on \$100 a month pension
- 5 still working but worth little
- 2 still working and worth nothing
- 3 partially dependent.

Of the 8 men who had died,

- 1 left an estate of \$133,000
- 1 left his business, but family lost it. His widow was living comfortably on income from \$80,000 life insurance
- 1 left \$7,500 estate
- 5 left nothing.

That so many were financial failures seems almost incredible, for at one time,

- 18 were worth more than \$100,000
- 12 of these were worth more than \$250,000.

TERM INSURANCE

Some investment salesmen advocate the purchase of low rate term life insurance and suggest the saving in premiums be invested in other ways. Term insurance for temporary needs, or as a preliminary to

conversion to permanent plans, serves an important and useful purpose. However, there are many fallacies in the term insurance argument.

We feel our entire article is to a large extent a refutation of the theory of "Term Insurance plus Investment." "Term Insurance plus Investment" ignores the facts of life, the facts we have brought out, that only a small percentage of people will acquire an estate for themselves and their families through ordinary investments.

Term insurance is not property. It is purely temporary protection, even though it may be carried to age 65 or 70. Term insurance is not cheap. The cost over a period of years up to age 65 or 70 is great, as compared to the cost of permanent plans.

Many important guarantees mentioned at the beginning of this article are missing from term insurance. The guaranteed settlement options, both for the policyholder and his beneficiaries, are some of the most valuable guarantees in a life insurance policy, and they are not available on a term policy that has expired.

People are living longer, and a high percentage are living beyond the time when term life insurance protection is available. More than two-thirds of life insurance policyholders are living beyond age 65, and more than one-half beyond age 70. Many of the problems that life insurance solves still exist when people die at 75, 85, or 100 years of age.

PERMANENT INSURANCE

There are good reasons why a substantial part of every estate should consist of life insurance, whether the estate be large or small and regardless of age at time of death.

For instance, estate and inheritance taxes, final expenses, and settlement costs have to be paid in cash. They may easily amount to 25 per cent of an estate. Life insurance is cash at death, immediately available to pay taxes and settlement costs and buy necessities for the family while other property goes through probate court. Without it, you must sell something in order to raise this cash, and that frequently means the sacrifice of valuable property at a forced sale with additional loss to the estate.

If the treasurer of the United States would agree to discount your estate taxes and all other settlement costs and debts, and give you your choice of (1) making an immediate settlement of 60 cents on the dollar or (2) paying 4 per cent a year of the amount for 20 years, after which they would be paid in full, you would probably say that either was a pretty good offer. If, in addition, he said he would cancel all payments in event of death during the 20-year period, you would think the offer very good indeed. Such discounts may be guaranteed through the purchase of

a piece of permanent life insurance property, and in no other way.

COMPARISONS WITH OTHER PROPERTY

A discussion of life insurance would not be complete without at least some comments on the most common types of other investments. We are not against the purchase of real estate, mutual funds, or stocks as an investment. We are in favor of them. Millions of people should own them directly, and over 90 million Americans do own them indirectly through their life insurance policies. All who can should own their homes.

We believe traders in the market are an important group who help to supply needed capital to industries and provide a stable market for those who are at the moment more in need of cash than they are in need of an investment.

The largest brokerage house in the world, Merrill, Lynch, Pearce, Fenner and Beane, in a brochure entitled, "How to Invest," said, "In raising a family and building up an estate, there are a lot of things that come before investing in securities. For example, we believe that family insurance comes first; not just an insurance policy, but an insurance plan that will afford your dependents reasonable security. If you show a net surplus but have never really worked out what you consider an adequate insurance plan, you should do it before you broaden the development of your estate by investing in securities."

After buying an adequate amount of life insurance, millions of Americans should have billions of dollars left over every year to buy stocks, real estate, or any other type of property they choose.

When you have plenty of high cash value life insurance and annuities, and then feel the urge to try to make highly profitable investments, we say by all means, do so.

Everyone wants property, but few people are able to acquire much of the usual type. This is obviously true since 89 per cent of our national income is from earnings and only 11 per cent from investments.

REAL ESTATE AS INVESTMENT

The years 1914 to 1929 were good years to own real estate; the years 1930 to 1940 were bad. The years 1941 to the present have been exceptionally good. What of the future?

Dr. Huebner says, "Real estate, except home ownership, cannot be classed as an investment. It is speculative. Like stocks, it may earn much money or lose a great deal, and there is no assurance that it will return the price paid for it, or a profit thereon. Real estate is a type of speculative property that offers at least as many chances of loss as profit."

Real estate is not the ideal investment for most

people. There are many hidden hazards in such ownership.

Changes in values in both city and rural property are continually occurring. Centers of population in our cities shift. Sections once in great demand for business purposes deteriorate and are given over to warehouses and tenements. Fashionable and dignified residential streets are frequently left deserted or deteriorate into slums.

Earthquakes, drouths, floods—there is never any way to determine the future trend of real estate values. Business conditions, the decisions of other people who own property, new inventions, the building of new through highways and toll roads, or important new bridges, have frequently almost overnight destroyed property values in one neighborhood to the advantage of property values in other neighborhoods.

MUTUAL FUNDS AS INVESTMENT

Mutual funds are not a guarantee of financial security. Some have done well; some have done badly. We find the market value of some going up while others go down, and many are average in results. Always some stocks and some mutual funds do better than others, but it is not always the same stocks and the same mutual funds at all times. What stock shall we buy? What mutual fund should we trust with our money, and when shall we buy?

If we buy a mutual fund and later find there are other funds that are doing much better, shall we sell and reinvest? If so, which one shall we choose next time? What about the expense of changing from one to another?

There are hundreds of choices and hence hundreds of decisions to make if we are to do anything more than gamble. Some investment authorities claim that it requires more skill to select the right mutual fund than the right common stock, that your chances for successful investment are better if you choose your own stocks and bonds with the advice of a good investment advisory service. Others argue that mutual funds are the answer to an investor's prayer.

The assets of the mutual funds are now approximately \$7½ billion, but their market values are not guaranteed so they are not liquid assets. It is worth noting that the assets of the so-called "investment companies," or mutual funds, were approximately \$7 billion in the year 1929. There were more than 1,000 investment companies at that time. About one-half of these companies failed or went out of business during the depression years, and the assets of the surviving companies dwindled to \$2 billion in 1932 and on down to \$1 billion in 1941. New growth started in about 1942. Approximately \$3 billion of new capital has been invested since then,

and there has been a large increase in the market price of common stocks listed on the various stock exchanges.

MAKING A CHOICE

Roger Babson has said that 90 per cent of successful businessmen lose money on their outside investments. He says it can't be poor judgment because they are successful in their own business, that the reason is simple—a successful man is busy with his own business, and he doesn't have time to do a good job in investing.

An internationally-known banker once said, "After a lifetime of earning, the man who still has his savings intact, without any interest, is indeed a rare and fortunate person."

To be safe must we, then, turn all of our surplus funds over to life insurance companies? Certainly not. No one should want to put a damper on the adventurous spirit which has helped to make America great. It is a fine thing for our country and for millions of investors to see what they can do in other types of property.

Real estate, common stocks, mutual funds may be suitable investments for the right people, for the right purpose, and at the proper time in a lifetime career. If you can afford to lose money and want to "take a flyer," you may find it a lot of fun. You may make a handsome profit and help build up your country. For those who have adequate funds, a combination of investments in life insurance, real estate, mutual funds, and common stocks may be just the thing.

STORY OF A DOCTOR

Following is an actual case to illustrate the point. A prominent and successful businessman, whose father was a doctor, has told the following story. It illustrates the importance to those who are in position to make investments in real estate, of hedging against future developments through the purchase of a substantial amount of life insurance, both to protect any mortgages he may place against the property and to guarantee himself and the dependent members of his family an adequate living income in times of depression.

"My father was a doctor. He died in 1918, at age 49, when I was 15. Doctors are not supposed to be very good businessmen, but he was. He believed in two things as basic investment: real estate and life insurance. He would buy a piece of commercial real estate, insure his life for the amount of the mortgage, improve the property, and let the income pay off the mortgage. If he died in the meantime, the property would be paid for. He made the largest of such ventures just before he died.

"He was financially successful beyond his own

lifetime because there was sufficient guaranteed income for mother from life insurance so that she could live, as well as equity income from real estate and some stocks that he owned.

"From 1918 to 1929 or 1930, mother's income from life insurance was about 20 per cent of her total income. It was nice to have, but not vital. Prices were high, and it wouldn't buy much. From 1930 to 1940, that same number of dollars was 80 per cent of her total income. And we didn't have to sell a dime's worth of equity to raise money for her to live on.

"The consequence was that since 1940, when values came back, about 65 per cent of her income is from her equities and 35 per cent is still there in the same number of dollars from life insurance. Mother is 79 now, hale and hearty, and I think in no small part because she has never had one single day of financial worry."

Every man's personal earning power is the basic inflation hedge within his estate. When that is gone, dependents must live on income from money, and the day when they can speculate is gone. As a consequence, without life insurance, inflation hedge assets have to be sold; they're gone too.

SUMMARY

You don't have to be a wizard to know what an old man of 70 or 75 or older needs in the way of property. You don't have to be a wizard to know

what a widow with small children needs most of all. You don't have to be a wizard to know what a man who is disabled or is out of a job wants. It isn't property. The answer is "income." The heaviest burden an old man can bear is the burden of an empty purse—too old to work and too poor to live without working. Old age can last a long time, but it can't last longer than the income from a life insurance policy paid under the annuity settlement options guaranteed in the contract.

Life insurance is the only property which, in one contract, guarantees a constant increase in cash value, available at any time on demand for emergencies; guarantees the completion of the original investment program, and pays a good income if you become totally and permanently disabled; hedges against inflation through capitalization of your earnings, and thereby guarantees immediately a living income to your family in case of your death; and guarantees that if you live, all you have invested will be returned for your own old age, with the privilege of electing a guaranteed life income instead of a lump sum settlement.

Life insurance accomplishes everything that you want to accomplish for yourself and your family. Why be satisfied with less for your family? Why be satisfied with less for yourself?

New England Building
Topeka, Kansas

Program Chairmen Announced

Physicians who wish to suggest the names of speakers for future annual meetings of the Kansas Medical Society may do so by writing to the chairman of the Program Committee for each session. Chairmen now appointed are:

FOR 1956 MEETING IN TOPEKA

Newman V. Treger, M.D.
1704 West 10th Street
Topeka, Kansas

FOR 1957 MEETING IN WICHITA

Ernest W. Crow, M.D.
c/o Sedgwick County Medical Society
1102 South Hillside
Wichita, Kansas

Solid reasons for prescribing

ACHROMYCIN^{*}

Hydrochloride
Tetracycline HCl Lederle

For nearly two years, ACHROMYCIN has been in daily use. Thousands of practicing physicians in every field have substantiated its advantages, and the confirmations mount every day.

In any of its many dosage forms, ACHROMYCIN has proved to be well tolerated by patients of every age. It provides true broad-spectrum activity, rapid diffusion, and prompt control of a wide variety of infections caused by Gram-negative and Gram-positive bacteria, rickettsia, and certain viruses and protozoa.

ACHROMYCIN—an antibiotic of choice, produced under rigid controls in Lederle's own laboratories.

LEDERLE LABORATORIES DIVISION *AMERICAN Cyanamid COMPANY* PEARL RIVER, NEW YORK

*REG. U.S. PAT. OFF.



wide-spectrum activity

prompt control of infection

rapid diffusion

negligible side effects

PRESIDENT'S PAGE

DEAR DOCTOR:

My perpetual Christmas wreath calendar in the front window of my office tells me that it is just 34 days until Christmas! My desk calendar reminds me there are just three days left until Thanksgiving.

In addition to all the other things we Americans have to be thankful for—we are most thankful for Christmas! Many miracles have happened in all our lives at Christmas-tide. I hope someday to have time to collect the stories of Christmas miracles from many of you interpreters, teachers, and students of human nature. What a fine Christmas book such a collection would constitute. Shall we call the book, "The Doctors' Christmas Stories"? If you have experienced a Christmas miracle in your practice, I'd appreciate your writing me about it.

It gives me the greatest happiness to extend to you official greetings and Christmas good wishes from all the officers, councilors, and executive staff of the Kansas Medical Society. May I, also, invite you to my annual Christmas eggnog party? To wit:

ON CHRISTMAS DAY
YOU

ARE INVITED TO THE OLD FASHIONED MEN'S EGGNOG PARTY
OF

CONRAD M. BARNES, M.D.

AT HOME "BARNESHOUSE"

713 CASTLE ST., SENECA, KANSAS

COME TO THE NORTH LOUNGE ENTRANCE

FROM 12:15 P.M. UNTIL 2 P.M. GET OUT FOR A LITTLE FRESH AIR
AND VISIT WITH YOUR FELLOW MEN OF "GOOD WILL"—BASK IN
THE CHRISTMAS CHEER.

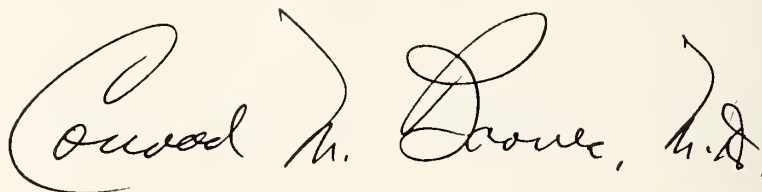
MERRY CHRISTMAS!

C.M.B.

IN THE YEAR OF OUR LORD 1955

If your A.M.E.F. budget has not already been filled, why not give a Christmas gift to this worthy purpose in honor of the Christmas spirit?

Christmasarily Yours,

A large, elegant handwritten signature in dark ink, reading "Conrad M. Barnes, M.D." The signature is fluid and cursive, with the first name "Conrad" being particularly prominent.

CONRAD M. BARNES, M.D., *President*

EDITORIAL COMMENT

SPECIAL ISSUE ON ECONOMICS

During recent years the JOURNAL has published several special issues devoted to specific subjects. Last year an issue covered the subject of alcoholism; in 1953 one contained a number of original papers on different phases of civil defense; before that an issue pertaining to nursing and nursing education was published. We are now presenting five papers on the subject of economics.

Other publications cover the field of medical economics and present material that is specific for physicians. In organizing this issue, therefore, members of the Editorial Board agreed that emphasis should be placed on three general subjects, investments, taxation, and estate planning.

It was obvious that one writer's views on investments would be limited to his particular field of endeavor in the business world, so that topic was subdivided into three headings, mutual funds, life insurance, and United States Savings Bonds. The Board then solicited articles on the five subjects from five persons who are in position to write authoritatively on the topics assigned. Their contributions are printed on the preceding pages.

All of us concerned with publication of the JOURNAL wish to express our thanks to these contributors. We feel that they have rendered a valuable service to members of the Kansas Medical Society in making this material available. Their co-operation is sincerely appreciated.

*Orville R. Clark, M.D.
Chairman, Editorial Board*

OUR JOURNAL

Down through the years the Editorial Board has had one broad objective, the publication of a JOURNAL that will reflect credit on the Kansas Medical Society. Whether or not that objective has ever been attained, or ever will be attained, is open to question, but a determined effort has been made to keep pace with the times.

The State Journal Advertising Bureau, operated under the auspices of the American Medical Association, has been helpful to the JOURNAL in that effort. The bureau's primary purpose is to serve as advertising representative for state and regional medical publications. This includes setting standards for acceptance of advertising, soliciting contracts, arrang-

ing for insertions and plates, billing, and countless other services which would be financially outside our range if we were working independently.

In addition the bureau makes it possible for personnel here to meet with representatives of other state journals at regular intervals. Such a meeting was held last month at the A.M.A. offices in Chicago, and three Kansans were in attendance. All felt stimulated by the opportunity for exchange of views and for learning from experts the new techniques in presentation of medical copy.

An innovation this year was a schedule of four workshops on the subjects of format and makeup, editing, publishing costs, and advertising. The workshop on publishing costs, incidentally, was conducted by Mr. Ovid H. Bell, Fulton, Missouri, who prints our JOURNAL as well as those of Missouri and Iowa.

As a result of suggestions made at the workshops, the Editorial Board is now considering ideas to be incorporated in Volume 57, which begins in January. It is probable that readers of the JOURNAL do not note each change in format, and that is not important. What is important is that our JOURNAL continue to progress.

Perhaps the most helpful portion of the meeting, from the point of view of appearance of the JOURNAL, was the workshop on format and makeup. This was conducted by Mr. O. M. Forkert, who heads a firm of graphic arts consultants in Chicago and is internationally known as an advisor on design and typography at the University of Chicago. He began his discussion by reporting that he had examined one issue of each publication, had evaluated each one, and had noted individual suggestions for improvement.

Mr. Forkert said that medical journals, as a group, are excellent; he rated them two points above the national average of educational and professional publications. Eleven in the group represented by the S.J.A.B. received ratings higher than 87 in his system of grading, and it was encouraging to the Editorial Board to learn that our JOURNAL is one of those. He approved too the individuality of the different publications in spite of the fact that most carry similar advertising text, have similar problems, and have a common aim.

So the work continues. Mr. Forkert's suggestions are being carefully studied and will be adopted as conditions permit. Other sources of information will also be explored as 1956 comes and passes so that members of the Kansas Medical Society can feel that their JOURNAL increases in value, improves in appearance, and is truly representative of the journalistic and professional ability of the physicians of the state.

AMERICAN MEDICAL EDUCATION FOUNDATION

The average cost of training a doctor has increased more than 100 per cent in the past 20 years. Today it costs more than \$13,000 to complete that training or more than \$3,000 for each of the four years. The medical student pays about one-fifth of this cost in tuition, the difference being recovered by gifts, endowments, and public appropriations. Medical colleges absorb about 30 per cent of the total budget of the universities of which they are a part, yet they enroll only a small percentage of the total university population.

The cost to the medical student is not low. It is estimated that the four-year cost is about \$9,200, a heavy burden on the student's parents or wife. Much of this cost is for living expenses over and beyond tuition. Any substantial increase in tuition would eliminate many students and cut back the quality of the student body. While it is a common belief that medical schools receive more applications than can be accepted, in the final analysis the 7,500 entering students each year are generally selected from 13,000 to 14,000 applicants.

This introduction points out the need of our medical schools. Someone has to find the answer. Some medical educators and university presidents believe the only answer is federal subsidization. The majority feel that a federal subsidy would be a perilous alternative to private support. With federal support comes federal control or certainly qualifying standardization or regulation.

In 1949 organized medicine helped a group of the nation's leading business men organize a campaign to obtain from voluntary sources the financial help needed for medical education. A year later the American Medical Education Foundation was formed to solicit contributions from physicians. While these two groups have raised \$7,000,000 in their first few years, it is no more than a beginning toward the \$10,000,000 a year contribution needed to solve the financial problem of our schools. Even this amount would be short of a much larger sum needed for expansion and equipment to keep pace with scientific advancements.

The Committee on Endowment of the Kansas Medical Society is making a concerted effort to solicit all Kansas doctors this year, hoping that each will contribute not less than \$15. Each councilor of the Society, in cooperation with the committee, has appointed a physician in each county to solicit funds.

The committee anticipates many questions and here attempts to explain the problem and answer these questions, as outlined in the nine sections below:

1. This is the physicians' chance to help medical education and prove federal subsidization is not necessary.
2. Every physician paid only a small portion of the total expense of his medical education. Contributions will pay back a part of this deficit.
3. At first the American Medical Association contributed \$500,000 to this program each year. This year they contributed only \$100,000. This makes individual contributions even more essential.
4. All contributions go to medical education. The A.M.A. contributes the necessary cost of administering the program.
5. Each donor can contribute to the school of his choice by enclosing a letter with his check or by indicating the school in the lower left hand corner of the check.
6. Contributions are tax deductible.
7. Contributions mailed directly to the chosen medical school are not credited to the A.M.E.F.
8. Checks should be made payable to American Medical Education Foundation. Contributions may be sent to the Kansas Medical Society or direct to the American Medical Education Foundation, 535 North Dearborn Street, Chicago 10, Illinois.
9. If each physician contributes a small amount, Kansas will reach its goal for this year.

NATIONAL ORGANIZATION FOR MEDICAL ASSISTANTS

The foundation of a new organization, the American Association of Medical Assistants, was laid on November 5 and 6 when 75 medical assistants from 15 states gathered in Kansas City to exchange ideas on the feasibility of founding a national group. All present were in favor of organizing, and a plan was outlined.

Mrs. Carmen Kline, Kansas City, was elected temporary chairman and conducted the two-day session. To facilitate the assembling of suggestions for a constitution, she assigned each person present to a committee, with membership based upon geographic distribution, and asked each committee to consider a different subject such as objectives, qualifications for membership, eligibility for holding office, duties of officers, operating procedure, and so on. Committee reports were later discussed by the entire body, amended if desired, and approved.

To insure continuation of interest in organization plans, the group elected a chairman to serve during the coming year, and Miss Maxine Williams, Kansas City, was named to that office. Her contact with county and state groups will be maintained through a "working committee" made up of one member

from each state, elected by representatives from that state. After these state elections to the committee, the group itself chose Miss Nita Fabac, Missouri, as its secretary and Mrs. Kline to direct finances.

A copy of the proceedings of the Kansas City meeting will be sent to each state representative soon so that the plan may be presented for the approval of each medical assistants' group and its sponsoring medical society. In the fall of 1956, probably in October, another national meeting will be held in Milwaukee for the purpose of effecting organization.

This interest in a national group has focused attention upon the Kansas Medical Assistants' Society and its history and has prompted such questions as "Which group was formed first?" "How did it get started?"

Right or wrong, members of the organization here have often expressed the belief that Kansas had the first such group. The secretary's book, containing minutes of all sessions, records that the first meeting was held at Wichita on May 13, 1940. It was attended by 297 charter members and 23 guests from 71 cities in 50 counties of the state.

That book, however, contains no report of the organization dates of the various county societies in Kansas. The *Bulletin of the Shawnee County Medical Society* records a meeting of the Topeka Physicians Assistants Society on April 10, 1940, in connection with reporting a vote of physicians to sponsor such an organization. The group later changed its name to Shawnee County Medical Assistants' Society. On May 28, 1940, organization was effected for a Wichita Secretaries Club, later known as the Sedgwick County Medical Assistants' Society, which served as hostess group for the first state meeting.

At the state meeting in 1941, charters signifying that the groups were component organizations of the Kansas Medical Assistants' Society were presented to representatives of Sedgwick, Wyandotte, Shawnee, Lyon, and Riley counties. A request for a charter from the society in Cowley County was recorded.

It is obvious from a study of the various records that Kansas can be counted as a pioneer in the field. It is apparent also that a need for such an organization was felt in other localities at about the same time. The Shawnee County Medical Society announced with pride that a Topeka assistant had accepted an invitation to address the first meeting of medical assistants in Michigan in September of 1940.

The Kansas Medical Society had an active part in the formation of the state organization for medical assistants and has continued to lend advice, support, and encouragement. County medical societies have participated in the same manner at the local

level. A number of officers of the Kansas Medical Society and members of its Committee on Medical Assistants were present at the Kansas City meeting and pledged the Society's support of a national group.

Physicians who are not now familiar with the purposes and accomplishments of the assistants' organization will learn, by a study of its programs and activities, that its members are sincerely devoted to the object which is stated in their constitution as ". . . to seek advantageous ways of assisting their professional employers to maintain and elevate the high standards which the medical profession and their aides have deserved and attained by years of unselfish loyalty to their profession and to the people."

MILITARY DEFERMENT FOR RESIDENTS

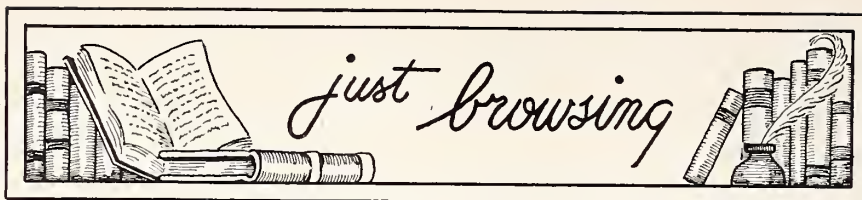
The Department of Defense has adopted a plan under which 1955 graduates of medical schools who are now serving internships may, on an individual basis, apply for deferment to serve two-year and three-year residencies in accredited hospitals.

Normally, it takes from three to four months to process applications for commissions. Only after applications have been processed and appointments for deferment are tendered and accepted will the names of physicians selected for deferment be forwarded to the Director of Selective Service. Therefore, it is essential that application forms be completed as quickly as possible.

The program will permit young regular-draft-eligible physicians to express a choice of service in which to be commissioned and to indicate a preference for the approximate time they would prefer to enter on active duty. Participants in this program who do not desire to be considered for residency deferment and those who apply for such deferment and are not selected will, in general, be required to enter on active duty sometime during the period July 1, 1956 through June 30, 1957. The desire that participants have expressed regarding the time at which they wish to enter on active duty during this period will be followed insofar as the requirements of the services will permit.

Further information may be secured from the Kansas State Advisory Committee to the Selective Service System, 315 West Fourth Street, Topeka.

The American Hospital Association announces a steady rise in hospital admissions since 1946, the year in which it began such statistical studies. Information is gathered from questionnaires answered by 6,970 hospitals in the country.



There is something inspiring in reading classic works of the master physicians of yesteryear. The careful clinical observations, the thorough investigations, and the logical conclusions show us how much can be done with the means available (and, by our present-day standards, often limited means indeed) when the observer is a true scholar.

William H. Welch, professor of pathology at Johns Hopkins University during the golden era of the "four greats" (Halsted, Kelly, Osler, and Welch), is such a man. In 1892 he published a report of "A Gas-producing Bacillus Capable of Rapid Development in the Blood Vessels after Death." The report was made within a year after the death of the patient, during which time not only the complete autopsy studies but extensive bacteriological studies had been completed, determining both morphological and biological characteristics. Finally, believing a new organism had been identified, he offered a name for it—*Bacillus aerogenes capsulatus*.

In his conclusions he states, "The bacillus is not pathogenic under ordinary conditions for healthy rabbits . . . however, under especial conditions [small doses may] prove fatal, the special condition in our experiment being pregnancy probably associated with the death of two embryos either before or soon after the injection.

"The bacillus develops rapidly in the blood after death, with formation of gas. . . .

"All of the conditions relating to the bacilli and their production of gas which existed at the post-mortem examination of the patient J.M. were produced experimentally in animals by inoculation of pure cultures of the bacillus isolated from the body of the patient.

"It is our intention to continue the experiments in order to determine more accurately how long the bacilli may survive in

the body of a living animal, how they are disposed of there, and the possibilities of their exerting pathogenic effects under certain circumstances. . . ."

"A patient with chronic pulmonary tuberculosis, acute miliary tuberculosis, and a large sacculated aneurism of the ascending arch of the aorta, which had ruptured in two places through the anterior thoracic walls, died suddenly after repeated copious hemorrhages from the aneurism, but not immediately after the loss of blood. The autopsy was made in cool weather *eight hours after death* while the body was still warm, there being no odor or evidence of ordinary cadaveric decomposition present. The heart and blood-vessels everywhere were found to contain gas-bubbles in large amount; gas was also present in the subcutaneous connective tissue in some places, in the heart-muscle, liver and other organs. . . . The bacterioscopic examination of the blood revealed the presence of non-motile, capsulated bacilli in very large number wherever the gas was found, and no other species of micro-organism could be detected. This bacillus was isolated in pure culture and found to be an obligatory anaerobe. Its morphological and biological properties were studied and have been described. . . . No accurate determination of the gases produced by the growth of the bacillus was made save to establish by ignition the presence of hydrogen both in the original case and in the experimental animals.

"There can be no doubt that the gas found in the vessels and organs at autopsy on the patient was not atmospheric air, but was produced by the growth of the bacilli. . . ."

This study, completed within a period of a year, prepared the way for our present knowledge of gas gangrene. The accuracy of the work has kept the conclusions authoritative to this day.—O.R.C.

Clinicopathological Conference

CASE PRESENTATION

This 23-year-old colored female was admitted to the University of Kansas Medical Center for the first time on January 7, 1955, and died January 21, 1955. The chief complaint was fever of four weeks' duration.

The patient was in good health until December 12 when she developed chills and fever up to 104 degrees. This was initially accompanied by low back pain. The fever was relieved by aspirin. Two days later she saw a physician who made a diagnosis of "flu" and treated the patient with a shot of penicillin, followed by oral Achromycin. On December 16 she was seen by another physician who continued the Achromycin. By December 18 the patient felt better, and her temperature stayed at 99 degrees for two days. On December 20 she again spiked fever to 104 degrees. She was hospitalized with a diagnosis of pneumonia.

Her illness remained severe, and three days later she required oxygen. On December 26 she had become delirious and irrational, remaining so for a period of three days. By January 1 she was able to be out of the oxygen. Two days later she vomited one pint of coffee-ground material. Following this she was unable to keep down food or water because of choking and vomiting.

Since the birth of a son 15 months before, the patient's menstrual periods had been irregular. In October, 1954, she began taking hormone shots in an attempt to regulate menstruation. On December 1 she was seen by a physician who diagnosed pregnancy. Two days later, however, she had a normal menstrual period. Menstruation had ceased at the time the present illness began.

The patient's past history consisted of an eye injury at age 10 necessitating eye surgery. She was a gravida I, para I, and had had a normal, full-term, spontaneous delivery without complications 15 months prior to the present illness. At the time of delivery a chest film was reported normal, and tuberculin skin test was negative. The patient, herself, had been a premature baby and had been followed medically rather closely until she was 18 years old.

There was family history of maternal hypertension and paternal diabetes mellitus. Both parents were living.

On system review, the patient complained of headaches for many years. There was decreased vision in

the right eye because of previous trauma. She complained of cough early in her illness, but this subsided, only to recur five to six days prior to admission. She had right lower chest pain at the onset of her illness, but this had since disappeared. She complained of low back pain intermittently since having a fall during her pregnancy, but this was not severe nor continuous.

Physical examination revealed a well-developed, fairly well-nourished, Negro female appearing both acutely and chronically ill. Temperature was 103, pulse 130, respirations 24, blood pressure 110/60. The right pupil was fixed, with a lens opacity. There was decreased vision in the right eye. The left eye was normal. Examination of the chest revealed dullness posteriorly in the right base, moist rales in the right base, and a few scattered fine dry rales in the left base. The heart was not enlarged. There was a gallop rhythm. There was a questionable grade I systolic murmur at the apex. The right upper quadrant was tender, but no organs or masses were palpated. There was no significant lymphadenopathy. Neurologic examination was negative. Pelvic examination was negative.

Laboratory: Several urinalyses were done, specific gravity varying between 1.002 and 1.011, a trace to one plus albumin, no sugar. There were varying numbers of red cells, white cells and casts in the urinary sediment.

Numerous blood counts were done. The red count ranged between 3.5 and 4.1 million, hemoglobin between 59 and 73 per cent (9.2 to 11.2 gm.). The white count varied between 10,000 and 15,400. The differential showed between 80 and 94 per cent polys. Circulating eosinophil counts were 28 and 44 per cu. mm. on different days. VDRL was non-reactive. NPN varied from 40 on admission to 22.4. Blood sugar was 104 while the patient was receiving IV fluids. Initial serum electrolytes were sodium 127 mEq./L, potassium 2.7 mEq., CO₂ from 18 to 29 mEq., and chlorides from 83 to 106 mEq./L. Total proteins were 4.85 gm. per 100 ml., albumin 2.66, globulin 2.19. A stool was positive for occult blood.

Agglutination studies were negative. One week after admission serum bilirubin was 3.3 with 2.4 direct, thymol turbidity 7, and cephalin-cholesterol flocculation 3 plus. Numerous blood cultures were done which revealed *Staphylococcus aureus*, coagulase positive, with moderate sensitivity to erythromycin, bacitracin, and chloramphenicol. Sedimentation rate was 19 mm./30 min. and 29 mm. in one hour.

In the hospital, bronchoscopy was done on admission. There was a minimal amount of mucoid secre-

Edited by Glen R. Shepherd, M.D., and Mahlon Delp, M.D., from recordings of the conference participated in by the departments of medicine, radiology, and pathology of the University of Kansas School of Medicine as well as by the third and fourth year classes of medical students.

tion in the trachea and in the right main bronchus. This was cultured. A scant growth of non-hemolytic staphylococcus was obtained. Throughout hospitalization the patient remained febrile, with temperature ranging between 100 and 105 degrees. She had a persistent tachycardia ranging between 110 and 140. Initially she was placed on aqueous penicillin, parenteral fluids, aspirin, and sponges to control fever.

On the following day erythromycin was started. It was continued parenterally along with the penicillin throughout the patient's hospital course. Thoracentesis was attempted in the right posterior chest, but no fluid was obtained. The patient was given supportive therapy in the form of intravenous fluids and small whole blood transfusions. She was digitalized two days after admission.

On the third hospital day bacitracin was added to the antibiotic regimen. The patient was initially placed in oxygen, later placed in an oxygen-aerosol tent, and bacitracin was nebulized into the tent. She had coffee-ground emesis and tarry stools but, on the whole, she was able to retain food and medications throughout hospitalization. By the third hospital day it was felt that the patient was improving somewhat; however, the remainder of her hospital course was a steadily worsening one.

She manifested fever, tachycardia, intermittent hic-cough, pleural friction rub over the left anterior chest, a palpable spleen, thrombophlebitis, and episodes of delirium.

On the day prior to death, the patient became extremely apprehensive, dyspneic, and cyanotic. Respirations increased to 60 per minute. Throughout the night she remained dyspneic and cyanotic and, by the following morning, was extremely cyanotic and dyspneic. Death occurred at 8:45 a.m.

Question: What antibiotics did the patient receive?

Dr. Dowell: On the second day erythromycin was added. One gram every 24 hours, given intravenously, was ordered initially. This dosage was gradually increased throughout hospitalization. On the fifth hospital day bacitracin was started, 20,000 units every six hours. Erythromycin was increased until, about a day or two before death, she was receiving 6 to 8 grams per 24 hours. The bacitracin was increased from 80,000 units per day to 100,000 units per day.

Question: Was she raising sputum in the hospital?

Dr. Dowell: Yes, but with difficulty and in minimal amounts.

Question: Was it thick and purulent?

Dr. Dowell: Not particularly. It was mucoid and watery.

Question: Was a sputum culture done?

Dr. Dowell: Yes, and it was negative at 24 hours.

Question: Do you know when the diagnosis of pregnancy was made and how reliable it might have been?

Dr. Dowell: I think that was by physical examination.

Question: Can you describe the terminal event or the day preceding the terminal event when she became apprehensive and dyspneic?

Dr. Dowell: On the morning before she expired she seemed to be about the same. She had been in a rather small aerosol tent, and at about two o'clock that afternoon she became extremely apprehensive, and cyanosis was detected for the first time. She was breathing extremely rapidly though her blood pressure remained about the same. The tachycardia persisted, fever persisted, and she remained alert. She slept some during that night. The next morning she was still markedly cyanotic and had very rapid respirations. She remained conscious right up to the time that she died. There was no precipitous drop in her blood pressure.

Question: Was hemoptysis noted at any time?

Dr. Dowell: No hemoptysis was noted.

Question: Was the blood culture taken a week before death positive?

Dr. Dowell: Yes, it was positive.

Question: Is there any history of abortion?

Dr. Dowell: Not that I could determine.

Question: Did the questionable murmur change any during following examinations?

Dr. Dowell: No, there was never any marked murmur heard during her hospitalization.

Question: Did she ever go into shock prior to her transfer here?

Dr. Dowell: I don't know that definitely. It was remarked in the transfer letter we received that she had a persistent hypotension.

Question: Hypotension?

Dr. Dowell: Yes. Her blood pressure varied between 90, 100, and 110 systolic during her previous hospitalization.

Dr. Delp (chairman): Let us see the electrocardiograms.

Mr. Robert H. Schnetzler (fourth year medical student)*: The first was taken on the day following admission, January 8. The rate is about 130, with regular sinus rhythm. The P waves are upright in leads I, II and aVf. The QRS vector is about minus 10 degrees, which is left axis deviation within normal limits. The transition zone is between V₂ and V₃. The conduction times are all normal including the QT interval, which is about 0.28. I find that this electrocardiogram is compatible with sinus tachycardia.

This second tracing was taken three days after digitalization, on January 12. The rate is again 130 and regular. The PR interval is lengthened to about 0.20 and the QT interval is shortened to about 0.20. The

* Received M.D. degree since this conference, in June, 1955.

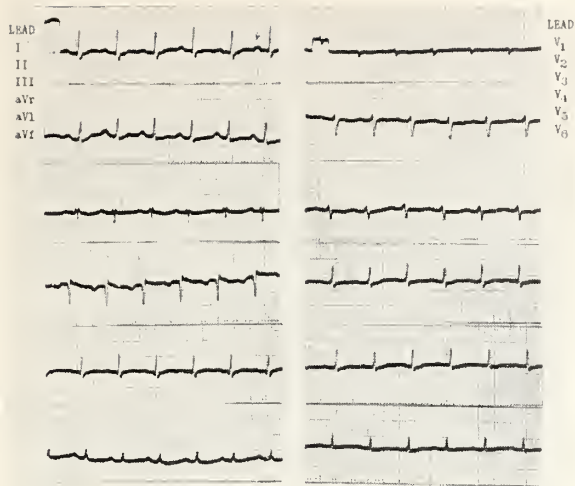


Figure 1. Electrocardiogram taken January 12, interpretation in text.

T waves are isoelectric in all leads except in II, aVL and V₅ where there is a small terminal T wave. The QT segment is depressed in V₅ and in all chest leads. I find this compatible with sinus tachycardia again and digitalization. There may be a hypopotassemia effect.

The third electrocardiogram was taken three days before death. The only change is that once again the QT interval is about 0.28 and lengthened. The rate is again 130 and regular. I think this may be compatible with an increased hypopotassemia on top of digitalization. There is a sinus tachycardia.

Dr. Delp: Any comments, Dr. Lin?

Dr. Lin (cardiologist): No, sir.

Mr. Paul R. Staley (fourth year medical student)*: The first x-ray was taken on December 20 at the time of admission to the other hospital. The bony shadows and soft tissue shadows were normal. The transverse diameter of the heart was within normal limits. There was some slight flattening of the costophrenic angle. There was a patchy type of infiltration in the upper part of both lung fields, more marked on the right.

Another x-ray was taken three days later. A shadow of radiolucency with an opacity around it demonstrated a cavity. There was also a second cavity.

A third chest film was taken on January 3. It showed an increased density in the right base and numerous cavities. There may possibly have been some pleural adhesions. Also there was an increased infiltration on the left.

A KUB was taken January 5 in another hospital. No abnormal shadows were noted.

A KUB taken the day prior to death showed a tremendously dilated loop of intestine.

A chest x-ray taken the day prior to death showed an increase in consolidation in the right base, consolidation in the left base, and infiltration throughout the entire lung fields. There seemed to be dilatation of the right auricle. Though the outline of the left side of the heart was not visible, it did appear to be dilated on the right.

Dr. Delp: Dr. Tice, do you care to comment on the x-rays?

Dr. Tice: I think the report is accurate. There was a report of a cavity seen on the left side in one of the films. I think the KUB indicated the size of the liver and the spleen to be increased.

DIFFERENTIAL DIAGNOSIS

Mr. James M. Stout (fourth year medical student)*: We are concerned here today with a 23-year-old Negro woman whose illness began abruptly with chills and fever. She had a rapid fulminating course ending in her death 40 days later. The important points in the history I shall summarize as being the following: She received wide spectrum antibiotics initially when she first developed her chills and fever. She became better again six days later only to relapse in eight days. She was hospitalized with a diagnosis of pneumonia and was put on erythromycin. I consider this to be an important factor in her history. She was admitted to the University of Kansas Medi-

* Received M.D. degree since this conference, in June, 1955.



Figure 2. Portable chest x-ray taken January 20, interpretation in text.

* Received M.D. degree since this conference, in June, 1955.

cal Center and was obviously very ill. She had a tachycardia and involvement of multiple systems. Staphylococcus aureus was cultured from her blood as well as from the bronchus. She rapidly worsened and died in cyanosis and tachycardia with rapid respirations. I think it also important in the history that she was placed on erythromycin and penicillin here. She improved in three days but again relapsed shortly thereafter.

She could have had a lymphoma with a secondary infection. However, there was no lymphadenopathy. If this were Hodgkin's disease, the fever wasn't typical. It usually is the Pel-Ebstein type of fever. Carcinomatosis would have been accompanied by a history of a primary site or some x-ray evidence, and this patient had neither.

Finally, I would like to talk about my diagnosis in this case, staphylococcal septicemia and bacteremia, bacterial endocarditis, and myocarditis with metastatic abscesses of the liver, spleen, and kidney and possibly of the central nervous system as well. I have a difficult time making up my mind whether or not this patient actually had endocarditis. Four main things are needed to make the diagnosis: (1) an audible murmur or a murmur which changes throughout the course of the illness, (2) fever, (3) anemia, and (4) a positive blood culture. The latter three were present. The presence of an audible murmur in this case was questionable, in my opinion. However, tachycardia could have masked the murmur. I believe she did have endocarditis though there were no petechiae. Petechiae are a frequent accompaniment of endocarditis, but in one series less than 12 of 52 cases had petechiae.

The mode of entrance is a part of the pathogenesis of this disease. Furuncles, boils, and carbuncles can produce staphylococcal septicemia with skin manifestations. There were no skin manifestations which would suggest that this was the way the organism gained entrance to the body. Thrombophlebitis could seed the organisms throughout the body with bacteremia and septicemia. It is usually accompanied by some cutaneous manifestations near the site. This patient did have thrombophlebitis which developed during the course of her illness in the hospital, but I believe it accompanied treatment.

Puerperal sepsis is a possibility. This patient was told that she was pregnant. She could possibly have had an abortion and developed staphylococcal septicemia and bacteremia from that. However, nothing in the physical findings suggested this, and the history was not good enough to make the diagnosis.

Osteomyelitis is capable of seeding the organisms into the blood, but no osteomyelitis was found.

Genitourinary tract infections from trauma within this tract can easily cause septicemia, but we have no history of this either.

I have come to the last two things I want to discuss: the mechanism of gaining entrance into the body from an upper respiratory tract infection or from the gastrointestinal tract. This patient could possibly, because the antibiotics allowed staphylococcus to overgrow, have developed staphylococcal pneumonia with bacteremia and septicemia from the pneumonia. However, in my opinion, and I disagree with my colleagues on this, the chest x-rays resemble more a septic pneumonia. It appears to me that this process was seeded from the bloodstream, and I prefer to think that the organisms gained entrance to the body in another way.

There have been many articles written on the so-called disease of pseudomembranous enterocolitis from the use of wide spectrum antibiotics. This patient was started initially on tetracycline. I believe that this is in her history. This had a part in changing the intestinal flora so that staphylococci overgrew. She improved in six days and relapsed eight days after the illness began. At that time I think she developed staphylococcal bacteremia. She was put on erythromycin again. This may be an important point also.

There have been many articles in the literature on erythromycin resistant staphylococci which developed after a few days of using erythromycin. This patient did possibly develop erythromycin resistant staphylococci. Vomiting blood, tarry stools, and episodes of diarrhea all suggest pseudomembranous enterocolitis. Possibly this patient developed a resistant staphylococcus from one of the hospital personnel. It has been reported that important carriers of resistant staphylococci are hospital personnel. Over 50 per cent, some authors reported, of hospital personnel carried erythromycin resistant staphylococci. They contaminate the patient.

For the mode of death in this patient, we have to consider pulmonary embolism because she had thrombophlebitis. It is a distinct possibility because of the tachycardia, rapid respirations, and cyanosis. However, she didn't have hypotension as we would expect with pulmonary embolus.

It is hard to make a diagnosis of myocarditis from a clinical basis. Patients with myocarditis frequently die suddenly. It could have been the mechanism of her death. The rupture of a mycotic aneurism of the central nervous system could have caused her death. She could have had an acute adrenal insufficiency. In Cecil's textbook it is written that people who have acute adrenal insufficiency usually have eosinophil counts above 50. This patient had an eosinophil count below 50. I believe the diagnosis of acute adrenal insufficiency can be eliminated. She could have had a pulmonary thrombosis. This is a distinct possibility. She could have been exsanguinated from gastrointestinal bleeding. That is a distinct possibility. How-

ever, I believe she died from an overwhelming pneumonic process.

CLINICAL DISCUSSION

Dr. Delp: I think that in this patient we have an etiologic agent to begin with, which is always gratifying, and we can make some conjectures as to what the pathogenesis might have been. What I am really interested in is why this patient didn't respond to treatment. Why did the disease progress so unrelentingly? What is your idea about this?

Student: I think it is probably due to the infecting organism being resistant to all antibiotics. It is the bacterial type that is important, regardless of how the infection occurred. If it is viral pneumonia, that would cause enough inflammation to pave the way for staphylococcal pneumonia.

Dr. Delp: Are there any other factors that might play a part in the progressive character of this patient's disease beside the failure of chemotherapy?

Millard C. Spencer (fourth year student)*: If the initial infection was staphylococcal pneumonia, the "flu" perhaps paved the way in knocking down the body's resistance. I believe she had what is considered a typical virus influenza rather than a virus pneumonia at first. On the factor of chemotherapy, an organism might develop resistance to one antibiotic and become resistant also to another antibiotic that hasn't been given.

Dr. Delp: Shockley, can you offer any other explanation for the terminal cause of death?

Clarence J. Shockley (fourth year student)*: From the x-ray you get the picture of congestion in all the lung fields. I was under the impression that there was dilatation of the right side of the heart. Right sided heart failure, I am sure, played some role in this patient.

Dr. Delp: I think that this patient had myocarditis. How do you think the patient got myocarditis? What would be the background for myocarditis? It is a rare situation, and I thought we had almost stopped making that diagnosis.

Donald E. Wilcox (fourth year student)*: In view of the fact that she had a gallop rhythm, I think that we should at least give it a little thought. Also a patient who did have septicemia could very possibly have developed bacterial endocarditis and subsequent myocarditis.

Dr. Delp: Dr. Weber, may we have your comments concerning the case?

Dr. Weber (internist): This patient entered the hospital with septicemia, the exact etiology of which is really unknown. Apparently she became ill December 12, and about a month later she entered the hospital here. The initial episode doesn't suggest

pneumonia. It had a sudden onset. Then the extremely septic course with recurrence suggests that she had the septicemia right from the onset. It may have started out as multiple abscesses due to staphylococcus. The lesion at the time of her admission was probably multiple pulmonary abscesses. The blood cultures were positive for *Staphylococcus aureus* which was resistant to most of our antibiotics. It is quite possible that she had a staphylococcus enteritis. I don't believe that was the source of her septicemia.

At the time of admission with these resistant organisms, I think that the only thing that could be done was treatment with massive doses of antibiotics. The source of this septicemia in seeding the blood stream is probably not important at this particular time, because there were so many abscess sites throughout the body that the septicemia itself required treatment specifically. Unfortunately, we have few antibiotics which are effective in staphylococcal septicemia. If penicillin is to be used even in the face of in vitro sensitivity, it should be used in massive doses: five million units every six hours or every four hours. Probably penicillin is still our antibiotic of choice. Again and again we have had cases here which have been fatal from staphylococcal septicemia, cases in which we have not started the massive doses initially.

I think the staphylococcus has become so resistant because we are actually selecting the resistant organisms. We treat the sensitive staphylococci, and as we continue to treat the patient with inadequate antibiotic dosages the resistant organisms then grow and flourish. So we actually select, and it is this selectivity which brings about resistant strains in this particular organism. Therefore, we should start with massive doses.

Erythromycin is an excellent antibiotic. It was first used two years ago in this particular disease, and there were many people who were cured of staphylococcal septicemia by using it. The doses then recommended and described in the literature are too small. Now we have to use larger doses, and 8 grams a day is just an initial dose. I would start with 8 or 12 grams a day.

It was obvious that this girl would probably die. There is no evidence of antagonism from combinations of antibiotics, at least in this particular group of antibiotics. I think that all three should be used in such a desperate situation.

How are you going to evaluate the effect of your drug? You can evaluate by blood cultures, and blood cultures twice daily would be indicated in this patient. If blood cultures do not become negative, then you have to give more extensive antibiotic therapy. I think that is the only way that such a patient will

* Received M.D. degree since this conference, in June, 1955.

ever survive. I think the patient finally died of adrenal insufficiency.

We have recently seen a patient with staphylococcal pneumonia with lung abscesses who would have died, I am sure, had he not been placed on cortisone. I don't recommend cortisone in any infectious disease. However, these patients die of toxemia and adrenal insufficiency. This patient had extreme stress throughout her course, probably developed a duodenal ulcer, and finally died of adrenal exhaustion from the staphylococcal septicemia. I think we have to be extremely aggressive in this particular disease as the mortality rate is increasing day by day.

PATHOLOGY REPORT

Dr. Ann Pollak (pathologist): This is a complex case, and I think I will present it in the way it was presented to us.

There was an obvious gastric ulcer with a fresh thrombus in it. I didn't find blood in the rest of the gastrointestinal tract so the ulcer probably had not been bleeding shortly before death.

The adrenal cortex showed tubular degeneration, a vacuolated appearance, that was not an artefact. This lesion has been produced in experimental animals by heavy doses of ACTH, doses far beyond ordinary physiologic or therapeutic uses. This adrenal showed this more than any adrenal I have seen before, so this patient had been suffering from extreme stress. The stress was an overwhelming infection.

The cut sections of lung were hemorrhagic all over, with numerous dark purple areas. There were red infarcts with areas of necrosis representing abscesses in the centers of some infarcts. The infected infarcts were near obstructed vessels containing emboli. There were innumerable such lesions scattered throughout the lung parenchyma.

The pleural surface of the lung showed abscesses that had ruptured through and produced an empy-



Figure 3. Gross photograph of the tricuspid valve, showing large vegetations on all leaflets of the valve.



Figure 4. Photomicrograph of tricuspid valve. The valve leaflet is in the lower right part of the picture. Superficial to this is an intense inflammatory infiltration. The left side of the picture shows the vegetations. The black masses are clumps of bacteria. (Low power, hematoxylin and eosin stain)

ema with a small amount of pus. Then something happened which in my experience is unusual. The empyema extended around the esophagus and produced a mediastinitis as well. The microscope merely confirmed what was obvious in the gross examination.

A section of lung showing a small vessel containing an infected embolus was surrounded by pus with an infarction nearby. There was in miniature the pathogenesis of the lung lesion. There were innumerable such lesions of varying size.

The heart showed numerous large vegetations involving all leaflets of the tricuspid valve. Vegetation was not found on the other valves in this case. Close examination of this heart revealed a minimal degree of inter-adherence of the cusps of the aortic valve. This lesion was of no functional significance but was an unmistakable stigma of previous rheumatic disease, so this woman had an area of diminished resistance involving her valves and she developed a bacterial endocarditis on the tricuspid valve.

Again the microscope confirmed what was apparent grossly. Bacterial stains showed the presence of innumerable staphylococci in the vegetations. Microscopic sections also showed the presence of several classical Aschoff bodies in the atrioventricular groove, the right ventricular muscle, and on the MacCallum patch above the posterior leaflet of the mitral valve. The mitral valve itself was normal.

In addition to this there was extensive diffuse interstitial myocarditis. Present were dark mononuclear cells, so I assume that this was also evidence of acute rheumatic fever, although I can say that this is non-specific and I am giving a guess. I have no doubt about the Aschoff bodies, however.

So a woman with previous rheumatic disease with an acute rheumatic fever flare-up developed bacterial

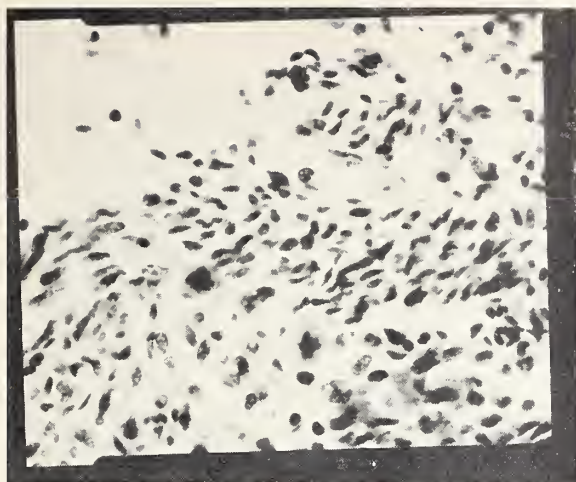


Figure 5. Photomicrograph of endometrium. The two large cells just below and to the left of the center of the field are syncytiotrophoblasts. (High power, hematoxylin and eosin stain)

endocarditis on the tricuspid valve due to staphylococci, with multiple infected emboli and therefore infected infarcts in the lung. She actually had little evidence of infection in the other organs. She had some abscesses in the kidney. The brain showed minute hemorrhages around the smaller vessels without definite evidence of brain abscess, so perhaps there was embolizing to the brain also. This may have accounted for some of her mental confusion.

Where did this infection come from? She was supposed to have started to menstruate two days before she died, and one would have expected to see a hemorrhagic endometrium. It was actually somewhat irregular and granular. There were rather low glands, desquamation of the surface, and a fair amount of hemorrhage. However, a section of one portion of the endometrium showed these were trophoblasts, which occur only in the endometrium in cases of recent pregnancy.

A vein in that region showed a few inflammatory cells in the wall. Therefore, the patient had thrombophlebitis in that portion of endometrium. Culture of the surface of the endometrium in this area revealed only a few colonies of non-hemolytic staphylococci.

The cervix showed large dilated veins surrounded by polymorphonuclear leukocytes extending out into the surrounding tissues. This was evidence of an extensive thrombophlebitis.

Finally we examined the broad ligament, and we found some thrombi in the veins of the broad ligament. One thrombus was partly recent and partly old.

Question: Can the gynecologists explain why the patient had a negative pelvic examination?

Dr. Newman (gynecologist): No, I cannot. That was a question I was going to ask. I presume that the initial infection that had been in this uterus had become quiescent. Otherwise I suppose the bacteriolo-

gists would have had larger colonies from the swabs of the tissue sections. I still wonder if there wasn't an exacerbation of her febrile course after the pelvic examination. The examination might have stirred things up. Even so, it is amazing that this woman did not have some discharge considering that she still had trophoblastic tissue in the uterus. I still don't have a satisfactory explanation of why she had a negative pelvis.

Dr. Delp: I think you might get the impression that I was misleading you on the protocol, but I believe the patient was critically ill and extremely difficult to examine, and she had to be examined in bed. I looked on the chart to see if there was any exacerbation of her illness, and I didn't see any.

ANATOMICAL DIAGNOSIS

Primary

Trophoblastic endometrium of fundus.

Vasculitis of endometrium, slight (two colonies of non-hemolytic staphylococci cultured).

Thrombophlebitis of cervix, moderate, with regional hemorrhage.

Old and recent bland thrombi in veins in broad ligament.

Bacterial endocarditis of tricuspid valve, advanced (blood culture positive for non-hemolytic staphylococci).

Multiple septic emboli to smaller pulmonary arteries.



Figure 6. Photomicrograph of adrenal cortex, showing tubular degeneration, a vacuolization. (Hematoxylin and eosin stain)

Multiple infected infarcts in lungs (heavy growth of non-hemolytic staphylococci and enterococci).

Fibrinopurulent pleurisy and mediastinitis, advanced (heavy growth of non-hemolytic staphylococci and light growth of enterococci).

Embolic pyelonephritis, moderate.

Diffuse glomerulitis, moderate.

Petechial hemorrhages in brain, moderate.

Focal enterocolitis, moderate (scant growth of non-hemolytic staphylococci).

Acute and chronic hyperplasia of spleen, advanced, with islands of hematopoietic tissue.

Myeloid hyperplasia of bone marrow, advanced.

Rheumatic heart disease with interadherence of aortic cusps, minimal, and Aschoff bodies in right ventricular myocardium and left atrial endocardium, slight.

Diffuse interstitial myocarditis (rheumatic?), moderate.

Chronic passive congestion of liver, advanced, and acute congestion of spleen, advanced.

Ascites (200 cc.).

Acute tubular necrosis of adrenals, advanced.

Organized thrombus in tributary of central adrenal vein.

Peptic ulcer of stomach with thrombosed artery at the base and an adherent thrombus.

Dilatation of pancreatic acini and focal pancreatitis, slight.

Periportal hepatitis, moderate.

Erythematous rash of skin of anterior chest, moderate, and of shoulders and back, slight.

Multiple puncture wounds and venesection wounds. *Accessory*

Congenital diverticula of aqueduct of Sylvius.

Fungus (monilia?) infection of cervix, slight.

COUNTY SOCIETIES

Dr. Alexander Marble, Boston, was guest speaker at a meeting of the Sedgwick County Medical Society held at Wichita on November 1. His subject was "Current Trends in Diabetes." In the afternoon of that day, Dr. Marble was speaker at a clinical conference at Wesley Hospital with Dr. T. J. Luellen and Dr. B. M. Matassarini as moderators.

A meeting of the Wyandotte County Society was held in Kansas City on November 15. Dr. George Higgins spoke on "Femoral Hernia" and illustrated his talk with movies. Dr. C. F. Kittle discussed "Hypothermia."

Dr. Harold F. O'Donnell, Dr. William H. Brown, and Dr. D. Cramer Reed were guest speakers at the October meeting of the Lyon County Society. The subject discussed was "Prostatic Obstruction."

Dr. John Reynolds, Chicago, spoke on "Treatment of Intestinal Obstructions" at a meeting of the Shawnee County Society held in Topeka on November 7. The group later watched the television program sponsored by Ciba Pharmaceutical Products featuring the Menninger Foundation.

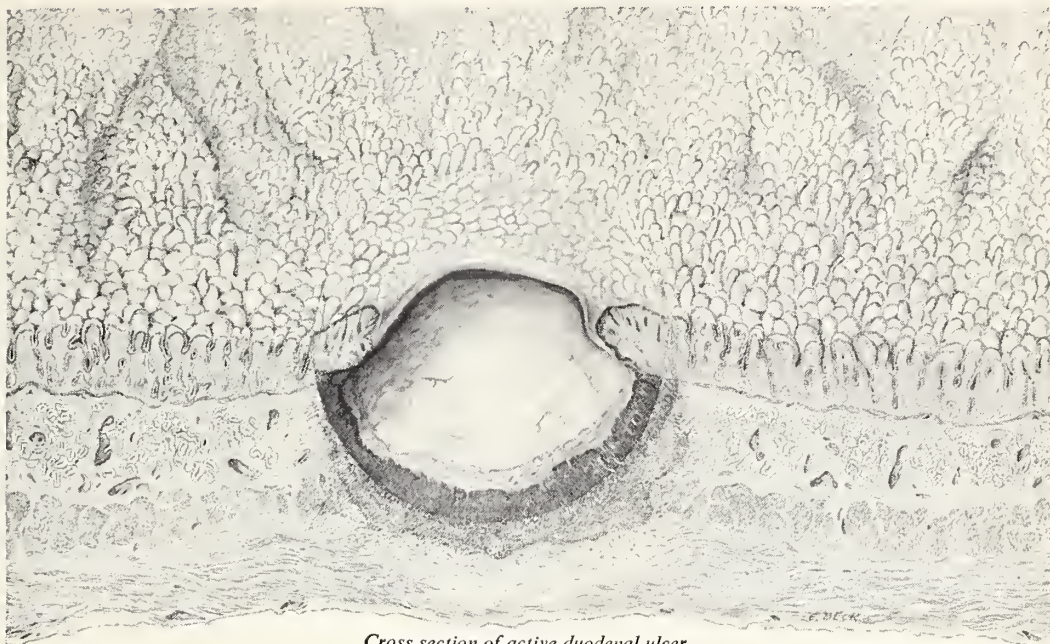
The Cherokee County Society was host to the Southeast Kansas Medical Society at a Christmas party at the Columbus Country Club on December 8. A social evening was enjoyed by the doctors and their wives.

Members of the Marion County Society entertained the Tri-County Medical Society at a dinner meeting at the Legion Hall in Marion on November 10. Physicians from Hutchinson were guests in addition to members of the Harvey and McPherson county societies. Dr. G. O. Proud, of the University of Kansas Medical Center, spoke on "Recurrent Otitis Media." At the business session Dr. Harold M. Glover, councilor for the district, discussed the plan for collecting funds for the American Medical Education Foundation.

Members of the societies in the First Councilor District met at the Cody Hotel, Leavenworth, on November 10. Dr. Conrad M. Barnes, Seneca, president of the Kansas Medical Society, was a special guest, and Mr. Oliver E. Ebel and Mr. Rueben M. Dalbec, of the executive office, also attended. Dr. W. Clarke Wescoe, dean of the University of Kansas School of Medicine, was speaker of the evening and discussed the American Medical Education Foundation. Mr. Dalbec spoke on welfare plans. Members of the Auxiliary, who were present for a dinner preceding the meeting, held a separate session with Mrs. Barrett A. Nelson, Manhattan, as speaker.

A symposium on the health hazards of chemicals will be held before the pharmacy section at the annual meeting of the American Association for the Advancement of Science in Atlanta in December. This program, sponsored by the Committee on Toxicology of the A.M.A., is designed to further education on the dangers of chemical products used in the home, on the farm, and in industry. It is estimated that 3,300 deaths each year result from misuse of chemicals.

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1. Ruffin, J. M.; Baylin, G. J.; Legerton, C. W., Jr., and Texter, E. C., Jr.: Mechanism of Pain in Peptic Ulcer, *Gastroenterology* 23:252 (Feb.) 1953.

2. Schwartz, I. R.; Lehman, E.; Ostrove, R., and Seibel, J. M.: A Clinical Evaluation of a New Anticholinergic Drug, Pro-Banthine, *Gastroenterology* 25:416 (Nov.) 1953.

SEARLE

THE MONTH IN WASHINGTON

Editor's Note. The following summary of Washington news was prepared by the Washington office of the A.M.A. for distribution to state and regional medical journals.

If advance signs mean anything, the Eisenhower administration next year can be expected to ask Congress for substantially more money for medical research, both direct research by scientists on the U. S. payroll and grants to others.

Currently the federal government is spending more money on medical research than at any time in history—almost \$98 million through the National Institutes of Health alone. In addition, other millions are being spent on medical research in the Department of Defense, Veterans Administration, and other agencies. Much of it is difficult to isolate in the federal budget.

A special committee named by the National Science Foundation at the request of former Secretary Hobby has been at work for some time on an appraisal of HEW's medical research programs. Its report, due before the reconvening of Congress, should be valuable to both the administration and the appropriations committees.

A few examples of what is happening this year:

National Cancer Institute has \$24.8 million to spend, about three million more than last year, with two-thirds going out in grants to non-federal researchers. National Heart Institute also is working on a much more liberal budget, \$18.7 million in contrast to last year's \$16.6 million. Because of the spectacular publicity now being given to heart research as a consequence of President Eisenhower's illness, it is a foregone conclusion that next year this institute will get a great deal more money.

The Mental Health Institute is profiting by the largest single increase of any research operation, almost \$4 million, from \$14.1 to \$18 million. Here again the prospects are for a substantial increase next year; problems of mental health are receiving much public attention, a situation that will not be ignored by Congress. Furthermore, the nationwide survey of mental health problems now about to get under way will point up the shortcomings in mental health research and be an additional argument for more U. S. dollars.

All the other research institutes also shared in last session's Congressional generosity. The Institute of Arthritis and Metabolic Diseases has about \$2.5 mil-

lion more, \$10.7 million instead of the \$8.2 million of last year. The Institute for Neurological Diseases and Blindness went from \$7.6 million to \$9.86 million, the Microbiological Institute from \$6.1 million to \$7.5 million, and the Dental Health Institute from \$1.9 to \$2.1.

As has been customary with recent Congresses, Senate and House this year actually voted more money for medical research than the Bureau of the Budget permitted Public Health Service to request. That may not be the situation when appropriation bills come up next session. Secretary Folsom of the Department of Health, Education, and Welfare did not take office until Congress was about to adjourn last summer, but since then he has repeatedly gone on record in favor of even greater U. S. expenditures for research. In October Mr. Folsom declared:

"... Today we find new problems and new opportunities. We find that heart disease, and cancer and arthritis, are taking an increasing toll. And so today as a nation we are changing our lines of battle to fight this increase in chronic and major diseases. All the facts point to one great need. It is the need for more research—to learn how these chronic diseases are started, so they can be prevented; to learn to detect them in the early stages, so they can be cured. . . ."

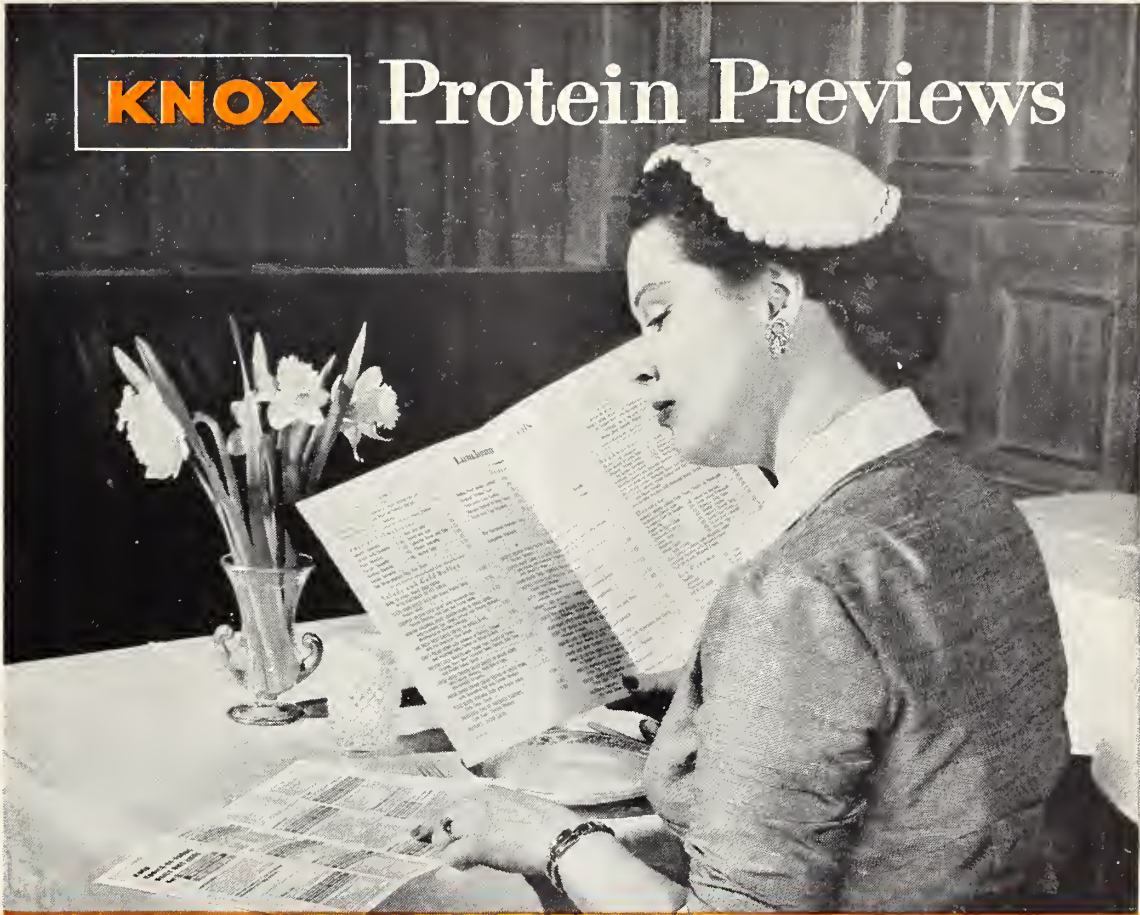
Again in November, addressing a conference on antibiotics, Mr. Folsom struck the same key, only this time more firmly. After noting that the U. S. now is spending over 12 times more on medical research than it was spending in 1946, he declared: "We must seriously consider making even more funds available for medical research to bring even greater benefits to humanity."

The Joint Congressional Committee on the Economic Report may have some health legislation to offer next year as a result of a study of the problems of the low-income family, including methods of paying hospital, physician, and drug bills.

Dr. Frank B. Berry, assistant defense secretary for health and medical matters, in his annual report warns that the doctor procurement problem again may become acute, despite last summer's two-year extension of the act. He said the department may not be able to obtain all the older physicians it needs because of the amendment barring the drafting of men over 35 if they have applied for a medical commission and been rejected on purely physical grounds. Also, Dr. Berry thinks the ratio of three physicians per 1,000 of troops may be too narrow a margin for safety.

KNOX

Protein Previews



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ACTIVITIES OF MEMBERS

Dr. Leo Haughey, Concordia, addressed the Rotary Club there recently on the subject of "Rejuvenation."

Dr. Joseph A. Budetti, Wichita, was in Chicago recently to attend meetings of the American Academy of Otolaryngology and the American Otorhinologic Society for Plastic Surgery, Inc. At the latter meeting he was elected to fellowship in the society.

Dr. M. M. Swan, Great Bend, showed a film, "The Valiant Heart" at the October meeting of the Parent-Teacher Association in Claflin. He later discussed rheumatic fever and conducted a question and answer period on heart disease.

Dr. William C. Menninger and Dr. Karl A. Menninger and the Menninger Foundation, Topeka, received Albert Lasker awards for 1955 at a presentation ceremony in Kansas City on November 17. The awards were set up under a foundation established by the late Albert Lasker, an advertising executive who died in 1952, to foster medical research and public education on major diseases.

Dr. F. Carter Newsom, Wichita, discussed mental illness before the Wichita Psychology Club at a recent meeting.

Dr. Maurice A. Walker, Kansas City, has been named to the Kansas City Urban Renewal Agency, a group set up under a 1955 Kansas law authorizing cities to participate with the federal government in redeveloping sub-standard areas.

Dr. Sam Zweifel, Jr., Kingman, recently addressed the Kingman County Nurses Association on the subject of new drugs and their uses and effects.

Dr. Harry Lutz, Augusta, head of the Butler-Greenwood Health Department, told the story of health organizations to the Augusta Rotary Club last month.

Dr. Donald L. Rose, director of physical medicine at the University of Kansas Medical Center, has

DEATH NOTICES

JAMES WILLBOARN S. CROSS, M.D.

Dr. J. W. S. Cross, 88, pioneer physician of Osborne County, died at his home in Osborne on October 16. He was an honorary member of the Osborne County Medical Society. He had practiced for 62 years, since his graduation from Northwestern Medical College, St. Joseph, Missouri, in 1893. He received his Kansas license in 1901 and practiced in Portis and Osborne except during World War I when he was in the Army medical corps. At the time of his death he was serving as county health officer and coroner.

CHARLES MELBOURNE MILLER, M.D.

An active member of the Northwest Medical Society, Dr. C. M. Miller, 77, died at Oakley on October 16. He was graduated from the Kansas City Medical College in 1905 and immediately began practice in Oakley, leaving there to serve in the medical corps during the Spanish-American War and World War I and to serve as physician for the Union Pacific Railway Company in Ellis from 1928 to 1930. He was a member of the Oakley City Council for many years and served in the state legislature in 1951 and 1952. He received a tribute from the community on "Dr. Miller Day" in 1952, and is now being honored by the establishment of a memorial fund in his name, proceeds of which will be used to purchase equipment for the Logan County Memorial Hospital.

VICTOR G. HAURY, SR., M.D.

Dr. V. G. Haury, 50, an active member of the Franklin County Medical Society, with offices in Wellsville, died at Bethany Hospital, Kansas City, on November 11 after an illness of two weeks. A graduate of the University of Minnesota Medical School in 1935, Dr. Haury did postgraduate work in Pennsylvania and Minnesota and served as a research assistant in pharmacology at the Minnesota school and as associate professor of pharmacology at Jefferson Medical College, Philadelphia. He was in private practice in Audubon, New Jersey, before coming to Kansas to open his office in Wellsville in 1947.

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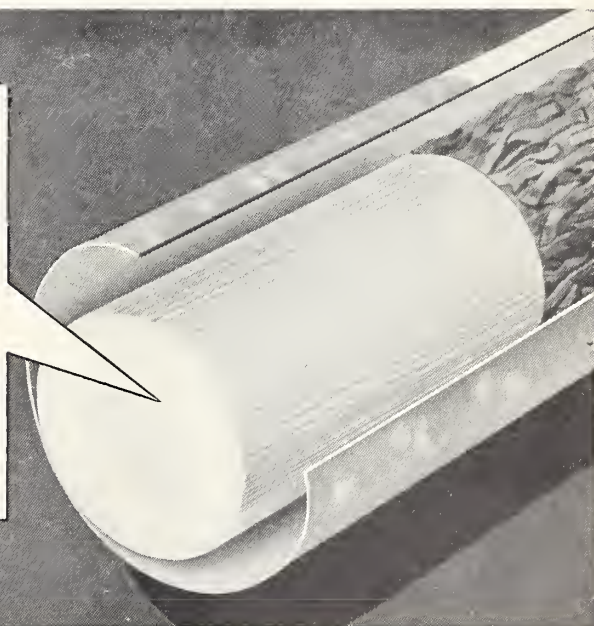
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been appointed rehabilitation consultant to the State Hospital Advisory Council. The new post is required by the amended Hill-Burton Hospital Construction Act.

A feature story about Dr. W. L. Warriner, 93-year-old practicing physician in Topeka, was published in the *Topeka State Journal* on November 1.

A talk on heart disease was given by Dr. Porter M. Clark, Independence, at a recent meeting of the Rotary Club in that city.

Dr. Henry Wallace Lane, Kansas City, was named president-elect of the Local Health Officers Association of Kansas at a meeting held recently in Chanute.

Governor Fred Hall has appointed Dr. John G. Hoffer, Medicine Lodge, as coroner of Barber County to fill the unexpired term of Dr. John D. Hilliard who has resigned.

Dr. Harold W. Brooks, Wichita, described plastic surgery for x-ray burns at a recent meeting of radiologists in the Sixth District.

Dr. William J. Reals, Wichita, presented a paper, "Protein Bound Iodine," at a meeting of the College of American Pathologists in Chicago recently.

ANNOUNCEMENTS

The American College of Chest Physicians, through its Council on International Affairs, will hold its fourth international congress on diseases of the chest in Cologne, Germany, August 19-23, 1956. The scientific program is now being organized, and physicians who have work they wish to present are invited to send outlines of their studies to Dr. Andrew L. Banyai, American College of Chest Physicians, 112 East Chestnut Street, Chicago 11, Illinois.

Essays for competition in the annual contest sponsored by the Mississippi Valley Medical Society will be accepted until May 1, 1956. Manuscripts must not exceed 5,000 words. Any subject of medical or surgical interest, including medical economics and education, may be covered. Author of the winning

essay will receive a price of \$100, a gold medal, and a certificate. Details may be secured from the Society, 209-224 W.C.U. Building, Quincy, Illinois.

A six-day postgraduate course designed especially for the general practitioner will be offered at the University of Colorado Medical Center, 4200 East Ninth Avenue, Denver 20, Colorado, January 16 through 21. A full day of discussion will be devoted to each of six areas: Monday, medicine; Tuesday, pediatrics; Wednesday, surgery; Thursday, psychiatry and psychosomatic medicine; Friday, obstetrics and gynecology; Saturday, fluid and electrolyte balance. Information may be obtained from the Director of Postgraduate Medical Education.

The 19th annual meeting of the New Orleans Graduate Medical Assembly will be held February 27, 28, 29 and March 1 at the Municipal Auditorium in that city. A tour to the West Indies and Central America will follow the meeting. Information may be secured from Maurice E. St. Martin, M.D., Secretary, 1430 Tulane Avenue, New Orleans.

The next scheduled examination (Part I) for candidates for certification by the American Board of Obstetrics and Gynecology will be held in various cities of the United States, Canada, and military centers on Friday, February 3, 1956. Twenty case abstracts are to be sent to the secretary of the board, Dr. Robert L. Faulkner, 2105 Adelbert Road, Cleveland 6, Ohio, as soon as possible after candidates receive notice of eligibility.

The Department of Medicine at the University of Kansas School of Medicine has announced new postgraduate opportunities of in-residence training in the fields of cardiovascular disease and pulmonary disease. The programs are of one month's duration and are limited to two enrollments in each field.

Starting dates for training in cardiovascular disease are November 1, March 1, April 1, and May 1. Training in pulmonary disease will begin November 1, January 2, April 1, and May 1.

Applications may be directed to Department of Postgraduate Medical Education, University of Kansas School of Medicine, Kansas City.

Announcement was recently made of a program of cancer fellowships and residencies offered by 16 divisions of the University of Texas M. D. Anderson Hospital and Tumor Institute. Complete information may be secured from Grant Taylor, M.D., Office of Education, Texas Medical Center, Houston 25, Texas.

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Intracavitary Use of Radioactive Colloidal Gold—Au¹⁹⁸

Morgan U. Stockwell, M.D.

Kansas City, Missouri

HISTORICAL INTRODUCTION

Many radioactive materials have been used in the field of medicine in the past 15 years. Radioactive gold (Au¹⁹⁸) is a relative newcomer to the medical group of radioactive materials. From the literature, it is difficult to determine when colloidal gold (Au¹⁹⁸) was first used, but one can be reasonably certain that it was used in the late 1940's. Müller,¹ a Swiss investigator, first suggested its intracavitary use in 1949, and he is believed the first to have used it in this way. Hahn,^{1, 2, 3, 4} an American investigator, is believed to have used radioactive colloidal gold before Müller but for uses other than intracavitary.

Müller,⁴ in 1950, presented a paper before the International Congress on Radiology in London, reporting four cases treated with radioactive colloidal gold. His first case was one of Hodgkin's disease with pleural effusion. In this paper, published in 1951, he noted "marked drying out of the pleural exudate and a definite reduction of the dyspnoea." At this time he suggested use of radioactive gold in the treatment of serous effusions due to carcinomatosis of the pleura and peritoneum. From this observation has arisen the greatest use of Au¹⁹⁸, namely as palliative therapy for effusions associated with carcinomatosis of the serous surfaces.

USES

Reports in the literature show that radioactive Au¹⁹⁸ has been used in many ways. Most of these uses are today in the experimental stage.

Second only to its intracavitary use is its intraprostatic injection for carcinoma of that organ. It has been injected directly into the spinal canal²³ and intrapericardially²⁴ for carcinomatosis of the meninges and pericardium.

Radioactive colloidal gold has been used by the intravenous route in the treatment of chronic myelogenous leukemia and as a tracer element in the scintillographic outline studies of the reticuloendothelial system.²⁷

Due to its intercavitary transfer, it has also been used in the study of the dynamics of Meigs's syndrome.²⁶

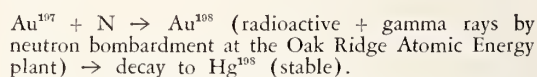
ADVANTAGES AND DISADVANTAGES

Carcinomatosis is often associated with effusion in one or more of the serous cavities. This results in mechanical interference with vital body functions.

Following Müller's observation it has been felt by some investigators that radioactive colloidal gold is nearing the ideal for radioactive isotope injection into cavities in the palliation of these effusions.

Radioactive Au¹⁹⁸ has the advantage of a short half-life (2.7 days) with only 5 to 10 per cent of the initial radioactivity remaining after six to seven days. For this reason very little radioactivity is lost, after one week, when repeat thoracentesis or paracentesis becomes necessary. This also means the therapeutic level can be delivered in a short time without danger of prolonged total body irradiation.^{6, 11, 12, 13}

Au¹⁹⁸ can be produced in great quantities in the nuclear reactor according to the following diagram.^{5, 7, 9}



When gold¹⁹⁸ is prepared a great deal of carrier in the form of inactive gold persists as such, and the number of gold¹⁹⁸ particles is few so the amount of stable mercury left is slight.⁵

Radioactive gold has a deleterious effect on the reticuloendothelial system. The particle size is such, however, that it is not picked up in large quantities by the lymphatics for transmission via the blood stream to the reticuloendothelial system. Less than 0.2 per cent of the given dose is detected in the circulating blood at any one time during the first 10 days.^{7, 10}

Approximately 90 per cent of the total irradiation effect is contributed by the beta particle. The radiation depth of the beta particle in tissue is approximately 3 mm. This short ray permits rather selective irradiation of the lining serosal surfaces in combating serous effusions without undue irradiation to other body tissues. The presence of the relatively small amount of long range gamma rays permits detection and measurement of radioactivity by use of the Geiger counter just as in the case of radioactive iodine studies.^{3, 8, 9, 10, 11, 12, 13}

The insoluble nature of radioactive Au¹⁹⁸ renders it chemically inert. There is none of the toxicity of a metallic salt. Insolubility plus its relatively large colloidal particle size promotes some degree of locali-

This is one of 11 theses, written by fourth year students at the University of Kansas School of Medicine, selected for publication by the Editorial Board from a group judged to be the best by the faculty at the school. Dr. Stockwell is now serving his internship at St. Mary's Hospital, Kansas City, Missouri. The author expresses thanks to Donald Germann, M.D., radiologist at the University of Kansas Medical Center, for technical assistance and use of case material.

When little patients balk at scary,
disquieting examinations (before you've
begun) . . .

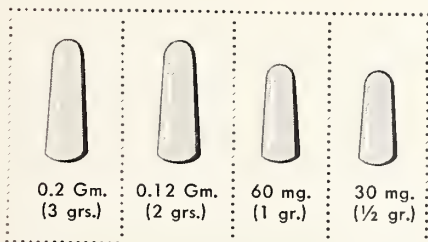
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zation of injected materials, thus giving a theoretical uniform irradiation. Furthermore, side reactions seen with standard x-ray therapy are much greater than with Au¹⁹⁸. The large doses of x-ray required to produce a similar effect result frequently in nausea, vomiting, leukopenia, and extensive body tissue reactions.^{5, 11, 12, 13, 14}

The two most appealing aspects of gold therapy are the short hospitalization time requirement and the minimal discomfort to the patient.²⁹

Disadvantages appear to be few. There is no affinity for either normal or tumor tissue as is seen with iodine for the thyroid gland and gallium for bone.²

Radioactive colloidal gold apparently has no curative value. However, it is of palliative value in many effusions of neoplastic origin.

The long term effect of Au¹⁹⁸ is not known. Therefore, it should not be used with abandon. To date this fact has not been of importance since only those patients dying of carcinoma have been treated.

MODE OF ACTION

Andrews, Root, and Kniseley¹⁵ state that following injection of the gold it is rapidly removed from the free fluid and fixed on the serosal lining, mostly in phagocytes. Some is also adsorbed onto the serous membrane. The distribution on the walls is uneven and without any special affinity for tumor implants or normal tissue. Other investigators are in agreement with these observations.^{8, 11, 12, 16, 18}

For a variable length of time following Au¹⁹⁸ injection, repeat thoracenteses or paracenteses show reduction or complete absence of tumor cells in the aspirated fluid. Many times the fluid will have changed from bloody to a clear solution.¹² Furthermore, the aspirated fluid was seen to be relatively free of radioactive material after 10 days, making repeat thoracentesis and paracentesis relatively safe.^{6, 9, 12, 15, 16, 18, 19} Pathological studies show the beta radiation effect to be essentially that of fibrosis with thickening of the pleura and peritoneum. The fibrosis and vascular obliterative effect is limited to superficial areas since the beta ray penetrates only 3 to 4 mm. into tissue whether it be neoplastic or normal.^{12, 15, et al.}

Little is known about the origin of effusion associated with carcinomatosis of the serous membrane lined cavities. Since the origin of the effusion is not known, the exact mode of action of radioactive gold in its control cannot be explained. Following Au¹⁹⁸ therapy, an appreciable number of patients are relieved of the distress associated with massive effusion. The chain of events in the fluid accumulation is somehow interrupted.

The theories are as follows:

A. Radioactive gold exerts a direct action on the

malignant cells to destroy them and thus control the effusion.⁶

B. There is a non-specific action of gold upon the secreting surfaces.⁶

C. The Au¹⁹⁸ somehow affects the tumor seedlings on the serous surfaces to stop their fluid stimulating effect.^{9, 11}

D. The primary effect of radioactive gold is probably by fibrosis and obliteration of the vascular supply to the serous membranes and thus prevention of fluid escape.¹¹

Most investigators accept the fact that the exact mechanism of fluid control is not known. They feel that a combination of factors is at work. The factors involved appear to be the direct action of Au¹⁹⁸ upon the free and fixed tumor cells, along with the fibrotic changes, somehow interrupting the chain of events in the effusion and giving relief to the recipient.^{12, 15, 16}

SELECTION OF PATIENTS

The most important use of radioactive colloidal gold is in the palliation of malignant effusion. When mechanical interference with vital functions is such that frequent thoracenteses or paracenteses are required, Au¹⁹⁸ is indicated. This is the sole criterion for its use. Since radiogold has not shown curative value for carcinomatosis, mechanical embarrassment is used as the indicator.^{1, 6, 8, 9, 10}

Cancer patients often suffer more from effusion than from the disease itself. Au¹⁹⁸ can be used effectively to supplant x-ray or more frequently as an adjunct to x-ray in its control.^{12, 13}

The University of Kansas Medical Center will accept patients for gold therapy if the following criteria are met:²⁹

A. If the patient is suffering from effusion of malignant origin.

B. If the effusion is producing mechanical interference with vital functions.

C. If the patient is not obviously terminal.

D. If the fluid is freely movable as determined by physical examination and x-ray (i.e., fluid is not "pocketed").

E. If the effusion (ascites) is not due to cirrhosis with hepatic obstruction.

F. If multiple large masses are not present (no beta radiation would penetrate large masses).

G. If intestinal obstruction is not impending (should not do surgery for at least 10 days following radiogold instillation).

DOSAGE

The optimum dosage has not yet been determined. In early cases some administered multiple small doses. The tendency at present is to administer a single dose.

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At the University of Kansas Medical Center²⁹ it is now customary to administer 150 millicuries intraperitoneally and 100 millicuries by pleural injection. This is sometimes altered slightly from case to case, according to the size of the patient. This routine corresponds favorably with that of most other workers in the radiogold field.

Andrews et al.¹ suggest single large doses and "not too hasty retreatment" since a lag, of a few days to weeks, is seen in response of the patient. This observation has been made at the University of Kansas Medical Center as well as by other investigators.^{1, 8}

Possibly less than the stated dosage would give satisfactory results, but as yet insufficient work has been done to determine the optimum.

Goldie, Watkins, Powell, and Hahn²⁸ conducted experiments on mice to determine dosage—effect correlation. They used mice in which they had implanted sarcoma into the body cavities. From these experiments they made some interesting observations. "Thus the variations of the radiotherapeutic effect are manifestations of various combinations of the amount of radiation with biological factors inherent in the tumor strain, mouse strain, or individual mice." They also stated that the intensity of the effect was distinctly proportional to the dose of injected radioactive colloidal gold.

TECHNIQUE

The patient is admitted to the hospital, and routine work-up is done. In addition, fluoroscopy and x-ray studies are made to determine whether the fluid in the thoracic or abdominal cavity is freely movable. Radiogold is usually not injected into localized pockets of fluid.²⁹

When the patient is deemed a candidate for gold therapy, he is prepared as for a routine thoracentesis or paracentesis. The cavity puncture is accomplished and some fluid is withdrawn. An attempt is made to roughly estimate the amount of fluid so enough can be left that even distribution throughout the cavity will be attained. In general the aim is to leave 500 to 1,000 cc. in the pleural cavity and 1,000 to 1,500 cc. in the peritoneal cavity.²⁹

After withdrawal of the desired fluid the patient is ready for the radiogold instillation. Injection of the cherry red, radioactive sterile colloidal gold is then accomplished through a polyethylene tubing connecting the gold solution to the trocar previously inserted into the body cavity. The therapist injects saline solution through the polyethylene tube into the gold container. This in turn forces the gold from the container into the tubing connecting the container with the body cavity. A total of approximately 100 cc. is injected into the cavity. The greater part of this volume is saline solution used to flush the gold from its container and tubing. The entire procedure takes only a few minutes.²⁹

The patient is returned to bed and instructed in postural exercises to aid in even distribution of the gold solution. He is observed for side reaction for two to three days, then discharged. Total hospitalization time is usually five to six days.²⁹

This procedure is the one used in the University of Kansas Medical Center. The procedure varies only slightly from that used in most hospitals administering radiogold.

SIDE EFFECTS

Radiogold appears to be tolerated quite well by the majority of patients. The most frequent complaint encountered is mild nausea of three to four days' duration. Vomiting occurs in a few of the patients. Gravidox and Thorazine give satisfactory control for most cases of nausea and vomiting.²⁹

No significant degree of radiation sickness is usually encountered. The reactions are considerably less than those seen with roentgen ray therapy.^{1, 6, 7}

Bone marrow depression is occasionally seen. One author²⁰ states that apparently little bone marrow depression is seen in the average patient receiving intracavitary gold until 200 to 250 millicuries is administered. The bone marrow depression that does occur is of short duration.^{8, 13} Mild pleuritis and diarrhea occur infrequently and also are of short duration.

Intestinal obstruction is said by some to be a late sequela of treatment in a few patients. This is thought to be due to extensive fibrosis created by the radiogold.^{8, 9}

Despite these infrequent severe side reactions, most investigators agree that the use of radiogold is a relatively safe therapeutic procedure.

RESULTS

This report includes 31 patients treated with radioactive gold at the University of Kansas Medical Center from January, 1952, to November, 1954.

These cases are evaluated on a total case basis, and as a comparison of the results of the thoracic cases with those of the abdominal cases. Results are further broken down into those who have lived for more than one month following therapy. This is done because it has been shown that the therapeutic effect of radiogold is not immediate. There is approximately a one-month lag period between the instillation of radiogold and a clinically observed response.

The cases are classified as "distinct palliative relief" and "minimal or no relief." In general, if the taps required were reduced by 50 per cent or more, in number and in amount of fluid removed, a distinct palliative relief was felt to have occurred. Patients who had not responded by at least a 50 per cent reduction in the number of taps were considered to have received minimal or no relief.

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Total cases studied (K.U.M.C.) 31

Distinct palliative relief	17	54.9%
Minimal or no relief	4	12.9%
Unable to evaluate	10	32.2%
	31	100.0%

Of the 31 patients treated, 21 were followed for a period adequate for evaluation. Seventeen of these 21 patients received definite benefit from their therapy and four received minimal or no benefit. When excluding the 10 patients classified under "unable to evaluate," it is seen that 80.9 per cent of those treated received distinct palliative relief from effusions. The group of 10 patients classified "unable to evaluate" includes seven patients who died in one month or less following radiogold therapy and three patients on whom no follow-up information was available.

The above results correspond favorably with those of several series reported.^{1, 3, 6, 7, 8, 14, 25} In one series of 16 cases, the author reports good palliative results in 25 per cent. In another series⁶ of 74 cases the author reports favorable results in 50 per cent of the total cases, and of those living more than one month 74 per cent received distinct palliative relief. This author further stated that the site of the primary tumor responsible for the effusion did not affect the response to therapy. Another author¹⁴ also reports there was no correlation between the primary neoplasm and the benefit derived. This same report stated that 30 to 50 per cent of all cases received benefit. When those dying in the first month were excluded, 60 to 70 per cent received palliative relief. Relief from effusion was the only favorable response noted in the patients of this series.

In a series of 36 cases, one author⁸ observed that the condition of the patient after therapy depended upon the extent and course of the neoplastic disease. The course of the primary disease was not altered by radioactive gold.

There are several changes which occur in the effusion following radiogold instillation. One author¹ reports that the fluid is decreased or stopped within a few weeks after therapy. Furthermore, the fluid changes from bloody to clear and becomes free of malignant cells. This is in accord with observations made on the 31 cases herein reported.

Total abdominal cases studied (K.U.M.C.) 19

Distinct palliative relief	10	52.6%
Minimal or no relief	3	15.8%
Unable to evaluate	6	31.6%
	19	100.0%

Thirteen intraperitoneal cases were followed for an adequate length of time. Of these, 76.9 per cent were seen to receive distinct palliative relief. In this group carcinoma of the ovary was the most frequent cause of the ascites. The site of the primary tumor was not varied enough to enable evaluation of tumor

site—response correlation. The sex response could not be evaluated since only three of the total of 31 cases were male patients.

Total thoracic cases (K.U.M.C.) 12

Distinct palliative relief	7	58.3%
Minimal or no relief	1	8.3%
Unable to evaluate	4	33.4%
	12	100.0%

Twelve cases were treated by the intrapleural route and were available for adequate follow-up information. Of these, 87.5 per cent responded with distinct palliative relief. This appears to be in keeping with other reports.⁹ There is usually a slightly better response from pleural than from abdominal effusions. The breast was the most frequent site of the primary lesion responsible for the pleural effusion.

In the typical case requiring weekly taps and responding to gold therapy, there is a rather patterned response. The patient would probably require another tap 10 days following gold instillation. Another tap would be needed at four weeks with a lesser amount removed. An additional tap would be needed at six weeks with a smaller amount removed, and the cavity would then probably remain relatively dry for a variable period. This time varies from a few weeks to several months. One patient in this series went nine months and another for one year without a tap.²⁹

Some patients respond well, then after a few months develop fluid again. These may be retreated. Two such cases are included in this series. The follow-up information on these two cases is not adequate for proper evaluation. No ill effects were recorded, and good results could be expected.

SUMMARY

In a significant number of cases there will be distinct palliative relief to the patient suffering from massive malignant effusion. The intracavitary use of radioactive colloidal gold (Au^{198}) does not prolong life to any appreciable extent but it does add to the comfort of those suffering from effusion. It is a good adjuvant¹⁴ to x-ray therapy and is superior to it^{1, 12, 13} with less radiation sickness. The studies thus far are encouraging in controlling and giving relief from effusion to the cancer patient.

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BOOK REVIEWS

Understanding Surgery. Edited and compiled by Robert E. Rothenberg. Published by Pocket Books, Inc., New York City. 620 pages. Price 50 cents.

The patient who wants more than a superficial knowledge of surgical procedures will find answers to his questions in this volume. It is divided into sections for the different parts of the body. Then the author lists conditions requiring surgery and gives short descriptions of appropriate surgical procedures, with illustrations. At the end of each discussion there is a question and answer series covering causes, symptoms, options of treatment, information on required hospital and nursing care, and postoperative conditions.

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Pathology for the Surgeon. Seventh Edition. By William Boyd, M.D. Published by W. B. Saunders Company, Philadelphia. 737 pages, 547 illustrations, 10 in color. Price \$12.50.

This book, now published under the title *Pathology for the Surgeon*, for the past 30 years has been well known to medical students and surgeons alike under the title *Surgical Pathology*. Previous editions of this work need no introduction to the medical profession, but Dr. Boyd has emphasized in this volume that it is written "for the graduate and not the undergraduate and for the surgeon rather than for the pathologist." In this regard he has attempted to emphasize clinical and practical aspects and the mechanisms by which pathologic lesions are producing the clinical pictures of disease—all of these of course in addition to the general descriptions of the pathologic lesions themselves. There has been a drastic revision of most of the book and the addition of new chapters on wound infections, the soft tissues, the skin, the endocrine glands, and the cardiovascular system.

The book is well organized, well written, and contains many good illustrations, and with the emphasis on the clinical relationship and mechanism of production of symptoms it has taken on an increased value for the surgical profession. It should be a well received and well used volume.—O.R.C.

Office Procedures. By Paul Williamson, M.D. Published by W. B. Saunders Company, Philadelphia. 412 pages, illustrated. Price \$12.50.

The book gives a good illustration of some of the procedures. However, I feel that the author has simplified the matter to such an extent that a misconception may result as to how extensive an office procedure should be. For my own estimation, only about 50 per cent of the procedures described should be performed in the office, and the rest of them should never be done without hospitalizing the patient.—R.C.Y.

Surgical Forum. Proceedings of the Forum Sessions, 40th Clinical Congress of American College of Surgeons. Published by W. B. Saunders Company, Philadelphia. 851 pages. Price \$10.

The 1954 *Surgical Forum* is the fifth in the series of annual books containing all the papers presented at the Surgical Forum of the Clinical Congress of the American College of Surgeons. Many of the newer developments in research work—both clinical and basic—are discussed, and one needs only to scan it lightly to realize what a tremendous amount of research work and development of new procedures and techniques is taking place in this country.

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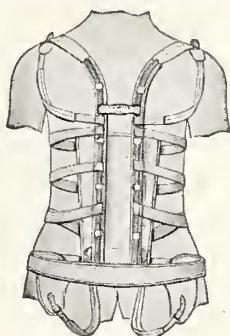
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In addition to the many fine features which have been found in earlier volumes, the progressiveness of this book is evident by the addition of a totally new chapter on vascular grafts, a field just opening up in surgical practice. The book contains a great deal of information of importance to anyone practicing surgery in this day when the surgeon has become much more than a technician and has learned to rely heavily on biochemistry and physiology and their relationship to body functions. These books are filling a definite place in our medical libraries and are most valuable.—O.R.C.

The Practice of Dynamic Psychiatry. By Jules H. Masserman, M.D. Published by W. B. Saunders Company, Philadelphia. 790 pages. Price \$12.

This is especially valuable as a textbook because it covers such a wide scope of psychiatric and psychological concepts. The early chapters cover basic concepts of psychiatry. Suggestions and illustrations concerning the importance of the doctor-patient relationship, history taking, interviewing, and diagnosis are covered. The book then branches out to discuss various schools of psychology, a number of Dr. Masserman's own concepts, and a detailed discussion of dynamic psychotherapy. It is valuable to both the beginner and the trained psychiatrist.—P.C.L.

Preventive Medicine in World War II, Volume II, Environmental Hygiene. Edited by Col. John Boyd Coates, Jr., M. C., and Ebbe Curtis Hoff, M.D. Published by Office of Surgeon General, Department of the Army, Washington, D.C. 404 pages. Price \$3.50.

This volume was prepared for publication in the historical unit of the Army Medical Service. It is not a text on sanitary engineering, but rather a record of the problems and military aspects of hygiene as they arose in World War II.

After every war, it is only natural and to be expected that accomplishments, and the lack of them, should be recorded. The book is a straightforward account of the role which the medical department played in the field of environmental hygiene. In various chapters, written by different authors, the following subjects are covered: food management, housing, water purification, waste disposal, control of insects, rodent control, research background of insect and rodent control, foreign quarantine, and preventive medicine in ports of embarkation and for persons in transit. The book indicates that the services of the sanitary engineer should be a vital part of any future program of military preventive medicine.—E.V.T.

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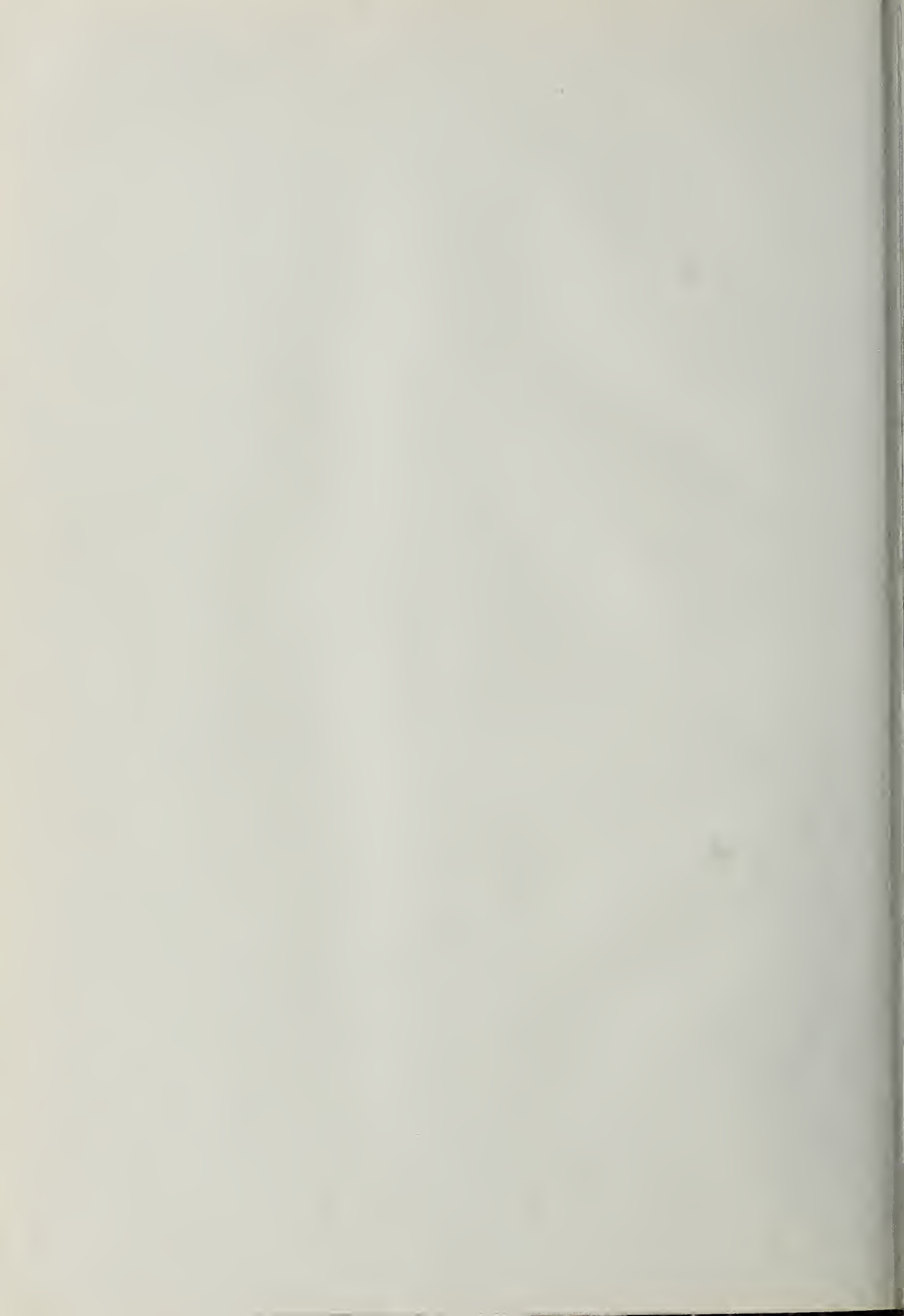
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